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**Keane et al.**

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(54) **GENERATION SYSTEMS AND METHODS FOR TRANSACTION IDENTIFIERS HAVING BIOMETRIC KEYS ASSOCIATED THEREWITH**

(58) **Field of Classification Search**  
USPC ..... 705/16, 21, 59, 71; 380/44, 262, 278, 380/279  
See application file for complete search history.

(71) Applicant: **The Western Union Company,**  
Englewood, CO (US)

(56) **References Cited**

(72) Inventors: **Tim Keane**, Dublin (IE); **Dean Seifert**,  
Dublin (IE); **Jonathan Grahmann**,  
Dublin (IE)

U.S. PATENT DOCUMENTS

1,109,127	A	9/1914	Juengst
2,362,134	A	11/1944	Hoing
3,599,151	A	8/1971	Harr
3,717,337	A	2/1973	McCain et al.
3,783,755	A	1/1974	Lagin

(Continued)

(73) Assignee: **THE WESTERN UNION COMPANY,**  
Englewood, CO (US)

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FOREIGN PATENT DOCUMENTS

AU	763008	B2	1/2001
CA	1270326		6/1990

(Continued)

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OTHER PUBLICATIONS

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*Primary Examiner* — Dante Ravetti

(74) *Attorney, Agent, or Firm* — Kilpatrick Townsend & Stockton LLP

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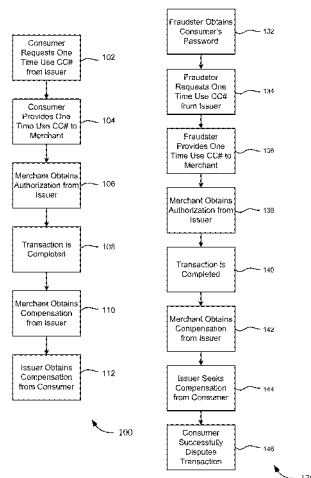
(57) **ABSTRACT**

A system for generating transaction settlement identifiers includes an arrangement configured to receive a biometric sample from a customer and an arrangement configured to use the biometric sample to select the transaction settlement identifier from a pool of predetermined transaction settlements. A mapping arrangement configured to map the selected financial transaction settlement identifier to an identifier of the customer also may be included.

(52) **U.S. Cl.**

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**20 Claims, 16 Drawing Sheets**



(56)

## References Cited

## U.S. PATENT DOCUMENTS

3,833,395	A	9/1974	Gosnell	5,371,798	A	12/1994	McWhortor
4,007,355	A	2/1977	Moreno	5,386,458	A	1/1995	Nair et al.
4,032,931	A	6/1977	Haker	5,388,815	A	2/1995	Hill et al.
4,060,228	A	11/1977	Tress et al.	RE34,915	E	4/1995	Nichtberger et al.
4,256,955	A	3/1981	Giraud et al.	5,404,000	A	4/1995	Nair et al.
4,321,672	A	3/1982	Braun et al.	5,408,077	A	4/1995	Campo et al.
4,385,285	A	5/1983	Horst et al.	5,426,594	A	6/1995	Wright et al.
4,454,414	A	6/1984	Benton	5,428,210	A	6/1995	Nair et al.
4,462,585	A	7/1984	Gieson et al.	5,432,326	A	7/1995	Noblett, Jr. et al.
4,511,132	A	4/1985	Muller	5,432,506	A	7/1995	Chapman
4,527,793	A	7/1985	Botcher et al.	5,440,108	A	8/1995	Tran et al.
4,528,643	A	7/1985	Freeny, Jr.	5,448,043	A	9/1995	Nakano et al.
4,562,340	A	12/1985	Tateisi et al.	5,448,471	A	9/1995	Deaton et al.
4,562,341	A	12/1985	Ohmae et al.	5,461,217	A	10/1995	Claus
4,577,848	A	3/1986	Hams	5,464,971	A	11/1995	Sutcliffe et al.
4,594,663	A	6/1986	Nagata et al.	5,465,206	A	11/1995	Hilt et al.
4,630,200	A	12/1986	Ohmae et al.	5,470,427	A	11/1995	Mikel et al.
4,634,107	A	1/1987	Vandersyde et al.	5,471,669	A	11/1995	Lidman
4,650,977	A	3/1987	Couch	5,475,603	A	12/1995	Korowotny
4,678,895	A	7/1987	Tateisi et al.	5,477,037	A	12/1995	Berger
4,697,246	A	9/1987	Zemke et al.	5,477,038	A	12/1995	Levine et al.
4,700,055	A	10/1987	Kashkashian, Jr.	5,479,530	A	12/1995	Nair et al.
4,718,657	A	1/1988	Otter et al.	5,483,444	A	1/1996	Heintzeman et al.
4,722,554	A	2/1988	Pettit	5,483,445	A	1/1996	Pickering
4,723,212	A	2/1988	Mindrum et al.	5,484,988	A	1/1996	Hills et al.
4,753,430	A	6/1988	Rowe et al.	5,491,325	A	2/1996	Huang et al.
4,764,666	A	8/1988	Bergeron	5,500,513	A	3/1996	Langhans et al.
4,795,892	A	1/1989	Gilmore et al.	5,502,766	A	3/1996	Boebert et al.
4,812,628	A	3/1989	Boston et al.	5,504,677	A	4/1996	Pollin
4,837,422	A	6/1989	Dethloff et al.	5,504,808	A	4/1996	Hamrick, Jr.
4,864,618	A	9/1989	Wright et al.	5,510,979	A	4/1996	Moderi et al.
4,884,212	A	11/1989	Stutsman	5,511,114	A	4/1996	Stimson
4,900,903	A	2/1990	Wright et al.	5,513,102	A	4/1996	Auriemma
4,902,881	A	2/1990	Janku	5,513,117	A	4/1996	Small
4,910,672	A	3/1990	Off et al.	5,524,073	A	6/1996	Stambler
4,941,090	A	7/1990	McCarthy	5,530,232	A	6/1996	Taylor
4,961,142	A	10/1990	Elliott et al.	5,534,855	A	7/1996	Shockley et al.
4,972,318	A	11/1990	Brown et al.	5,537,314	A	7/1996	Kanter
5,021,967	A	6/1991	Smith	5,546,523	A	8/1996	Gatto
5,025,372	A	6/1991	Burton et al.	5,550,734	A	8/1996	Tarterm et al.
5,027,316	A	6/1991	Frantz et al.	5,555,496	A	9/1996	Tackbary et al.
5,029,208	A	7/1991	Tanaka	5,557,516	A	9/1996	Hogan
5,053,607	A	10/1991	Carlson et al.	5,570,465	A	10/1996	Tsakanikas
5,056,019	A	10/1991	Schultz et al.	5,577,109	A	11/1996	Stimson et al.
5,082,268	A	1/1992	Santoro	5,578,808	A	11/1996	Taylor
5,088,711	A	2/1992	Newsome	5,586,036	A	12/1996	Pintsov
5,117,355	A	5/1992	McCarthy	5,590,038	A	12/1996	Pritod
5,119,293	A	6/1992	Hammond	5,592,400	A	1/1997	Sasou
5,146,067	A	9/1992	Sloan et al.	5,604,802	A	2/1997	Holloway
5,155,342	A	10/1992	Urano	5,612,868	A	3/1997	Off et al.
5,159,632	A	10/1992	Crandall	5,613,012	A	3/1997	Hoffman et al.
5,171,005	A	12/1992	Manley et al.	5,614,703	A	3/1997	Martin et al.
5,173,851	A	12/1992	Off et al.	5,621,640	A	4/1997	Burke
5,175,682	A	12/1992	Higashiyama et al.	5,622,388	A	4/1997	Alcordero
5,185,695	A	2/1993	Pruchnicki	5,627,909	A	5/1997	Blaylock et al.
5,200,889	A	4/1993	Mori	5,629,982	A	5/1997	Micali
5,202,826	A	4/1993	McCarthy	5,637,845	A	6/1997	Kolls
5,216,229	A	6/1993	Copella et al.	5,638,283	A	6/1997	Herbert
5,220,501	A	6/1993	Lawlor et al.	5,642,485	A	6/1997	Deaton et al.
5,231,569	A	7/1993	Myatt et al.	5,644,723	A	7/1997	Deaton et al.
5,233,167	A	8/1993	Markman et al.	5,647,583	A	7/1997	Emigh et al.
5,236,960	A	8/1993	Harrison et al.	5,649,114	A	7/1997	Deaton et al.
5,245,329	A	9/1993	Gokcebay	5,649,117	A	7/1997	Landry
5,250,906	A	10/1993	Bills et al.	5,650,604	A	7/1997	Marcous et al.
5,255,182	A	10/1993	Adams	5,657,201	A	8/1997	Kochis
5,283,829	A	2/1994	Anderson	5,659,469	A	8/1997	Deaton et al.
5,305,196	A	4/1994	Deaton et al.	5,666,765	A	9/1997	Samer et al.
5,317,135	A	5/1994	Finocchio	5,668,897	A	9/1997	Stolfo
5,326,960	A	7/1994	Tannenbaum	5,671,279	A	9/1997	Elgamal
5,327,701	A	7/1994	Dronsfield	5,673,320	A	9/1997	Ray et al.
5,334,823	A	8/1994	Noblett	5,675,607	A	10/1997	Alesio et al.
5,350,906	A	9/1994	Brody et al.	5,677,955	A	10/1997	Doggett et al.
5,352,876	A	10/1994	Watanabe et al.	5,678,010	A	10/1997	Pittenger et al.
5,357,563	A	10/1994	Hamilton et al.	5,679,940	A	10/1997	Templeton et al.
5,367,452	A	11/1994	Gallery et al.	5,684,965	A	11/1997	Pickering
				5,686,713	A	11/1997	Rivera
				5,687,322	A	11/1997	Deaton et al.
				5,689,100	A	11/1997	Carrithers et al.
				5,699,528	A	12/1997	Hogan

(56)

## References Cited

## U.S. PATENT DOCUMENTS

5,717,868	A	2/1998	James	5,920,628	A	7/1999	Indeck et al.
5,721,768	A	2/1998	Stimson et al.	5,920,629	A	7/1999	Rosen
5,722,221	A	3/1998	Maltman et al.	5,920,847	A	7/1999	Kolling et al.
5,732,136	A	3/1998	Murphree et al.	5,920,848	A	7/1999	Schutzer et al.
5,732,400	A	3/1998	Mandler et al.	5,923,016	A	7/1999	Fredregill et al.
5,734,838	A	3/1998	Robinson et al.	5,924,080	A	7/1999	Johnson
5,745,886	A	4/1998	Rosen	5,926,795	A	7/1999	Williams
5,754,654	A	5/1998	Hiroya et al.	5,936,221	A	8/1999	Corder et al.
5,757,917	A	5/1998	Rose et al.	5,937,396	A	8/1999	Konya
5,760,381	A	6/1998	Stich et al.	5,940,811	A	8/1999	Norris
5,761,648	A	6/1998	Golden et al.	5,943,424	A	8/1999	Berger et al.
5,764,789	A	6/1998	Pare et al.	5,943,656	A	8/1999	Crooks et al.
5,764,888	A	6/1998	Bolan et al.	5,949,044	A	9/1999	Walker et al.
5,770,843	A	6/1998	Rose et al.	5,949,885	A	9/1999	Leighton
5,774,870	A	6/1998	Storey	5,950,179	A	9/1999	Buchanan et al.
5,774,879	A	6/1998	Custy et al.	5,952,639	A	9/1999	Ohki et al.
5,778,067	A	7/1998	Jones et al.	5,953,709	A	9/1999	Gilbert et al.
5,779,379	A	7/1998	Mason et al.	5,953,710	A	9/1999	Fleming
5,783,808	A	7/1998	Josephson	5,956,700	A	9/1999	Landry
5,787,403	A	7/1998	Randle	5,960,412	A	9/1999	Tackbary et al.
5,790,677	A	8/1998	Fox et al.	5,960,963	A	10/1999	Chodack et al.
5,794,207	A	8/1998	Walker et al.	5,963,647	A	10/1999	Downing et al.
5,796,832	A	8/1998	Kawan	5,969,318	A	10/1999	Mackenthun
5,799,072	A	8/1998	Vulcan et al.	5,970,480	A	10/1999	Kalina
5,801,365	A	9/1998	Katz	5,974,146	A	10/1999	Randle et al.
5,804,806	A	9/1998	Haddad et al.	5,974,148	A	10/1999	Stambler
5,805,719	A	9/1998	Pare et al.	5,974,194	A	10/1999	Tackbary et al.
5,806,045	A	9/1998	Bjorge et al.	5,974,399	A	10/1999	Giuliani et al.
5,812,668	A	9/1998	Weber	RE36,365	E	11/1999	Levine et al.
5,815,555	A	9/1998	Cairo	5,975,514	A	11/1999	Emigh et al.
5,815,657	A	9/1998	Williams et al.	5,978,475	A	11/1999	Schneier et al.
5,825,881	A	10/1998	Colvin, Sr.	5,978,780	A	11/1999	Watson
5,826,241	A	10/1998	Stein et al.	5,983,003	A	11/1999	Lection et al.
5,826,243	A	10/1998	Musmanno et al.	5,983,196	A	11/1999	Wendkos
5,828,875	A	10/1998	Halvarsson et al.	5,983,208	A	11/1999	Haller et al.
5,832,457	A	11/1998	O'Brien et al.	5,984,181	A	11/1999	Kreft
5,832,463	A	11/1998	Funk	5,987,132	A	11/1999	Rowney
5,850,446	A	12/1998	Berger et al.	5,987,140	A	11/1999	Rowney et al.
5,855,007	A	12/1998	Jovicic et al.	5,987,426	A	11/1999	Goodwin, III
5,859,419	A	1/1999	Wynn	5,987,429	A	11/1999	Maritzen et al.
5,864,830	A	1/1999	Armetta et al.	5,987,438	A	11/1999	Nakano et al.
RE36,116	E	2/1999	McCarthy	5,991,376	A	11/1999	Hennessy et al.
5,865,470	A	2/1999	Thompson	5,991,413	A	11/1999	Arditti et al.
5,868,236	A	2/1999	Rademacher	5,991,748	A	11/1999	Taskett
5,870,718	A	2/1999	Spector	5,991,749	A	11/1999	Morrill
5,870,723	A	2/1999	Pare et al.	5,991,750	A	11/1999	Watson
5,873,072	A	2/1999	Kight et al.	5,993,047	A	11/1999	Novogrod et al.
5,875,435	A	2/1999	Brown	5,995,976	A	11/1999	Walker et al.
5,878,211	A	3/1999	Delagrange et al.	5,999,596	A	12/1999	Walker et al.
5,880,446	A	3/1999	Mori et al.	5,999,624	A	12/1999	Hopkins
5,889,863	A	3/1999	Weber	5,999,625	A	12/1999	Bellare et al.
5,893,080	A	4/1999	McGurl et al.	6,000,522	A	12/1999	Johnson
5,896,298	A	4/1999	Richter	6,000,608	A	12/1999	Dorf
5,896,725	A	4/1999	Lundstrom et al.	6,000,832	A	12/1999	Franklin et al.
5,897,625	A	4/1999	Gustin et al.	6,002,767	A	12/1999	Kramer
5,897,989	A	4/1999	Beecham	6,002,771	A	12/1999	Nielsen
5,898,154	A	4/1999	Rosen	6,003,763	A	12/1999	Gallagher et al.
5,899,980	A	5/1999	Wilf et al.	6,006,988	A	12/1999	Behrmann et al.
5,899,982	A	5/1999	Randle	6,009,411	A	12/1999	Kepecs
5,902,983	A	5/1999	Crevelt et al.	6,009,412	A	12/1999	Storey
5,903,633	A	5/1999	Lorsch	6,009,415	A	12/1999	Shurling et al.
5,903,721	A	5/1999	Sixtus	6,011,833	A	1/2000	West
5,903,880	A	5/1999	Biffar	6,012,045	A	1/2000	Barzilai et al.
5,903,881	A	5/1999	Schrader et al.	6,012,048	A	1/2000	Gustin et al.
5,909,486	A	6/1999	Walker et al.	6,012,635	A	1/2000	Shimada et al.
5,909,492	A	6/1999	Payne et al.	6,015,087	A	1/2000	Seifert et al.
5,909,673	A	6/1999	Gregory	6,021,202	A	2/2000	Anderson et al.
5,910,988	A	6/1999	Ballard	6,021,491	A	2/2000	Renaud
5,912,974	A	6/1999	Holloway et al.	6,021,943	A	2/2000	Chastain
5,913,202	A	6/1999	Motoyama	6,024,288	A	2/2000	Gottlich et al.
5,914,472	A	6/1999	Foladare et al.	6,026,370	A	2/2000	Jermyn
5,915,007	A	6/1999	Klapka	6,026,379	A	2/2000	Haller et al.
5,915,023	A	6/1999	Bernstein	6,027,216	A	2/2000	Guyton
5,915,024	A	6/1999	Kitaori et al.	6,029,150	A	2/2000	Kravitz
5,918,909	A	7/1999	Fiala et al.	6,029,888	A	2/2000	Harvey
				6,030,000	A	2/2000	Diamond
				6,032,133	A	2/2000	Hilt et al.
				6,032,136	A	2/2000	Brake, Jr. et al.
				6,032,137	A	2/2000	Ballard

(56)

## References Cited

## U.S. PATENT DOCUMENTS

6,035,285	A	3/2000	Schlect et al.	RE37,122	E	4/2001	Levine et al.
6,035,406	A	3/2000	Moussa et al.	6,212,504	B1	4/2001	Hayosh
6,039,245	A	3/2000	Symonds et al.	6,213,391	B1	4/2001	Lewis
6,039,250	A	3/2000	Ito et al.	6,216,227	B1	4/2001	Goldstein et al.
6,044,360	A	3/2000	Picciallo	6,219,994	B1	4/2001	Taniguchi
6,044,362	A	3/2000	Neely	6,222,914	B1	4/2001	McMullin
6,045,039	A	4/2000	Stinson et al.	6,223,166	B1	4/2001	Kay
6,047,268	A	4/2000	Bartoli et al.	6,223,168	B1	4/2001	McGurl et al.
6,049,782	A	4/2000	Gottesman et al.	6,223,983	B1	5/2001	Kjonaas et al.
6,052,674	A	4/2000	Zervides et al.	6,226,623	B1	5/2001	Schein et al.
6,058,417	A	5/2000	Hess et al.	6,229,879	B1	5/2001	Walker et al.
6,061,660	A	5/2000	Eggleston et al.	6,233,340	B1	5/2001	Sandru
6,061,665	A	5/2000	Bahreman	6,240,396	B1	5/2001	Walker et al.
6,061,794	A	5/2000	Angelo et al.	6,246,996	B1	6/2001	Stein et al.
6,061,799	A	5/2000	Eldridge et al.	6,247,047	B1	6/2001	Wolff
6,064,990	A	5/2000	Goldsmith	6,253,027	B1	6/2001	Weber et al.
6,068,183	A	5/2000	Freeman et al.	6,260,024	B1	7/2001	Shkedy
6,070,147	A	5/2000	Harms et al.	6,263,438	B1	7/2001	Walker et al.
6,070,150	A	5/2000	Remington et al.	6,263,446	B1	7/2001	Kausik et al.
6,070,154	A	5/2000	Tavor et al.	6,267,366	B1	7/2001	Graushar et al.
6,070,156	A	5/2000	Hartsell et al.	6,269,369	B1	7/2001	Robertson
6,070,798	A	6/2000	Nethery	6,270,011	B1	8/2001	Gottfried
6,072,870	A	6/2000	Nguyen et al.	6,275,829	B1	8/2001	Angiulo et al.
6,073,121	A	6/2000	Ramzy	6,278,979	B1	8/2001	Williams
6,078,907	A	6/2000	Lamm	6,282,516	B1	8/2001	Giuliani
6,081,790	A	6/2000	Rosen	6,282,522	B1	8/2001	Davis et al.
6,088,683	A	7/2000	Jalili	6,283,366	B1	9/2001	Hills et al.
6,088,684	A	7/2000	Custy et al.	6,286,756	B1	9/2001	Stinson et al.
6,092,202	A	7/2000	Veil et al.	6,289,322	B1	9/2001	Kitchen et al.
6,094,894	A	8/2000	Yates	6,292,786	B1	9/2001	Deaton et al.
6,097,834	A	8/2000	Krouse et al.	6,292,789	B1	9/2001	Schutzer
6,098,053	A	8/2000	Slater	6,295,522	B1	9/2001	Boesch
6,102,287	A	8/2000	Matyas, Jr.	6,298,335	B1	10/2001	Bernstein
6,104,815	A	8/2000	Alcorn et al.	6,298,336	B1	10/2001	Davis et al.
6,105,009	A	8/2000	Cuervo	6,304,860	B1	10/2001	Martin, Jr. et al.
6,106,020	A	8/2000	Leef et al.	6,304,915	B1	10/2001	Nguyen et al.
6,108,641	A	8/2000	Kenna et al.	6,305,604	B1	10/2001	Ono
6,111,953	A	8/2000	Walker et al.	6,308,887	B1	10/2001	Korman et al.
6,119,105	A	9/2000	Williams	6,311,170	B1	10/2001	Embrey
6,119,106	A	9/2000	Mersky et al.	6,314,169	B1	11/2001	Schelberg, Jr. et al.
6,119,931	A	9/2000	Novogrod	6,314,519	B1	11/2001	Davis et al.
6,119,933	A	9/2000	Wong et al.	6,315,195	B1	11/2001	Ramachandran
6,122,624	A	9/2000	Tetro et al.	6,317,745	B1	11/2001	Thomas et al.
6,122,625	A	9/2000	Rosen	6,321,210	B1	11/2001	O'Brien et al.
6,128,599	A	10/2000	Walker et al.	6,321,211	B1	11/2001	Dodd
6,128,602	A	10/2000	Northington et al.	6,321,984	B1	11/2001	McCall et al.
6,128,603	A	10/2000	Dent et al.	6,324,525	B1	11/2001	Kramer et al.
6,129,275	A	10/2000	Urquhart et al.	6,327,348	B1	12/2001	Walker et al.
6,134,561	A	10/2000	Brandien et al.	6,327,570	B1	12/2001	Stevens
6,135,292	A	10/2000	Pettner	6,327,575	B1	12/2001	Katz
6,138,911	A	10/2000	Fredregill et al.	6,330,544	B1	12/2001	Walker et al.
6,145,738	A	11/2000	Stinson et al.	6,330,546	B1	12/2001	Gopinathan et al.
6,145,740	A	11/2000	Molano et al.	6,334,108	B1	12/2001	Deaton et al.
6,148,377	A	11/2000	Carter et al.	6,334,109	B1	12/2001	Kanevsky et al.
6,149,055	A	11/2000	Gatto	6,335,688	B1	1/2002	Sweatte
6,149,056	A	11/2000	Stinson et al.	6,336,099	B1	1/2002	Barnett et al.
6,163,771	A *	12/2000	Walker et al. .... 705/18	6,343,279	B1	1/2002	Bissonnette et al.
6,164,043	A	12/2000	Miller et al.	6,345,261	B1	2/2002	Feidelson et al.
6,164,528	A	12/2000	Hills et al.	6,347,305	B1	2/2002	Watkins
6,167,386	A	12/2000	Brown	6,349,242	B2	2/2002	Mahaffey
6,169,975	B1	1/2001	White et al.	6,351,735	B1	2/2002	Deaton et al.
6,170,744	B1	1/2001	Lee et al.	6,351,739	B1	2/2002	Egendorf
6,175,823	B1	1/2001	Van Dusen	6,360,254	B1	3/2002	Linden et al.
6,178,409	B1	1/2001	Weber et al.	6,367,013	B1	4/2002	Bisbee et al.
6,181,814	B1	1/2001	Carney	6,367,693	B1	4/2002	Novogrod
6,182,219	B1	1/2001	Feldbau et al.	6,370,240	B1	4/2002	Woynoski et al.
6,185,545	B1	2/2001	Resnick et al.	6,370,514	B1	4/2002	Messner
6,189,787	B1	2/2001	Dorf	6,373,950	B1	4/2002	Rowney
6,193,152	B1	2/2001	Fernando et al.	6,377,935	B1	4/2002	Deaton et al.
6,195,644	B1	2/2001	Bowie	6,386,444	B1	5/2002	Sullivan
6,199,761	B1	3/2001	Drexler	6,386,457	B1	5/2002	Sorie
6,202,005	B1	3/2001	Mahaffey	6,394,343	B1	5/2002	Berg et al.
6,202,054	B1	3/2001	Lawlor et al.	6,401,206	B1	6/2002	Khan et al.
6,206,283	B1	3/2001	Bansal et al.	6,405,176	B1	6/2002	Toohy
6,209,095	B1	3/2001	Anderson et al.	6,405,182	B1	6/2002	Cuervo
				6,408,284	B1	6/2002	Hilt et al.
				6,409,080	B2	6/2002	Kawagishi
				6,411,942	B1	6/2002	Fujimoto
				6,415,271	B1	7/2002	Turk et al.

(56)

## References Cited

## U.S. PATENT DOCUMENTS

6,419,161	B1	7/2002	Haddad et al.	6,886,742	B2	5/2005	Stoutenburg et al.
6,422,462	B1	7/2002	Cohen	6,907,408	B2	6/2005	Angel
6,424,949	B1	7/2002	Deaton et al.	6,908,031	B2	6/2005	Seifert et al.
6,424,951	B1	7/2002	Shurling et al.	6,911,910	B2	6/2005	Sansone et al.
6,438,586	B1	8/2002	Hass	6,922,673	B2	7/2005	Karas et al.
6,442,529	B1	8/2002	Krishan et al.	6,943,312	B2	9/2005	Zimmermann
6,449,599	B1	9/2002	Payne et al.	6,950,810	B2	9/2005	Lapsley et al.
6,449,616	B1	9/2002	Walker et al.	7,070,094	B2	7/2006	Stoutenburg et al.
6,450,407	B1	9/2002	Freeman et al.	7,073,242	B2	7/2006	Bennett et al.
6,453,300	B2	9/2002	Simpson	7,086,584	B2	8/2006	Stoutenburg et al.
6,467,684	B2	10/2002	Fite et al.	7,092,916	B2	8/2006	Diveley et al.
6,468,155	B1	10/2002	Zucker et al.	7,099,878	B2	8/2006	Bruce et al.
6,473,500	B1	10/2002	Risaf et al.	7,103,577	B2	9/2006	Blair et al.
6,473,794	B1	10/2002	Guheen et al.	7,104,439	B2	9/2006	Dewan et al.
6,484,936	B1	11/2002	Nicoll et al.	7,104,440	B2	9/2006	Hansen et al.
6,488,203	B1	12/2002	Stoutenburg et al.	7,107,249	B2	9/2006	Diveley et al.
6,496,809	B1	12/2002	Nakfoor	7,120,606	B1	10/2006	Ranzini et al.
6,502,745	B1	1/2003	Stimson et al.	7,136,835	B1 *	11/2006	Flitcroft et al. .... 705/39
6,502,747	B1	1/2003	Stoutenburg et al.	7,152,045	B2	12/2006	Hoffman
6,505,179	B1	1/2003	Kara	7,246,244	B2	7/2007	Nanavati et al.
6,510,453	B1	1/2003	Apfel et al.	7,593,896	B1 *	9/2009	Flitcroft et al. .... 705/39
6,510,516	B1	1/2003	Benson et al.	7,664,703	B2	2/2010	Hansen et al.
6,510,983	B2	1/2003	Horowitz et al.	8,818,904	B2	8/2014	Keane et al.
6,516,302	B1	2/2003	Deaton et al.	2001/0001856	A1	5/2001	Gould et al.
6,516,357	B1	2/2003	Hamann et al.	2001/0018660	A1	8/2001	Sehr
6,519,571	B1	2/2003	Guheen et al.	2001/0023409	A1	9/2001	Keil
6,523,067	B2	2/2003	Mi et al.	2001/0023415	A1	9/2001	Keil
6,526,130	B1	2/2003	Paschini	2001/0025879	A1	10/2001	Kawagishi
6,532,451	B1	3/2003	Schell et al.	2001/0032878	A1	10/2001	Tsiounis et al.
6,536,037	B1	3/2003	Guheen et al.	2001/0034720	A1	10/2001	Armes
6,536,665	B1	3/2003	Ray et al.	2001/0037316	A1	11/2001	Shiloh
6,539,363	B1	3/2003	Allgeier et al.	2001/0037455	A1	11/2001	Lawandy et al.
6,547,132	B1	4/2003	Templeton et al.	2001/0042785	A1	11/2001	Walker et al.
6,549,119	B1	4/2003	Turner	2001/0047330	A1	11/2001	Gephart et al.
6,554,184	B1	4/2003	Amos	2001/0047342	A1	11/2001	Cuervo
6,561,339	B1	5/2003	Olson et al.	2001/0051876	A1	12/2001	Seigel et al.
6,565,000	B2	5/2003	Sehr	2001/0054003	A1	12/2001	Chien et al.
6,571,339	B1	5/2003	Danneels et al.	2002/0007320	A1	1/2002	Hogan et al.
6,575,358	B2	6/2003	O'Callaghan et al.	2002/0016769	A1	2/2002	Barbara et al.
6,575,361	B1	6/2003	Graves et al.	2002/0022966	A1	2/2002	Horgan
6,578,014	B1	6/2003	Murcko, Jr.	2002/0023055	A1	2/2002	Antognini et al.
6,588,658	B1	7/2003	Blank	2002/0026412	A1	2/2002	Kabin
6,591,249	B2 *	7/2003	Zoka ..... 705/18	2002/0032653	A1	3/2002	Schutzer
6,601,038	B1	7/2003	Kolls	2002/0038289	A1	3/2002	Lawlor et al.
6,606,744	B1	8/2003	Mikurak	2002/0040346	A1	4/2002	Kwan
6,609,113	B1	8/2003	O'Leary et al.	2002/0046106	A1	4/2002	Ishibashi et al.
RE38,255	E	9/2003	Levine et al.	2002/0046116	A1	4/2002	Hohle et al.
6,615,166	B1	9/2003	Guheen et al.	2002/0062253	A1	5/2002	Dosh, Jr. et al.
6,615,190	B1	9/2003	Slater	2002/0062285	A1	5/2002	Amann
6,618,705	B1	9/2003	Wang et al.	2002/0065712	A1	5/2002	Kawan
6,651,885	B1	11/2003	Arias	2002/0065716	A1	5/2002	Kushchill
6,670,569	B2	12/2003	Smith et al.	2002/0067827	A1	6/2002	Kargman
6,671,818	B1	12/2003	Mikurak	2002/0076018	A1	6/2002	Banks et al.
6,678,664	B1	1/2004	Ganesan	2002/0079364	A1	6/2002	Davies
6,701,216	B2	3/2004	Miller et al.	2002/0082920	A1	6/2002	Austin et al.
6,704,714	B1	3/2004	O'Leary et al.	2002/0087337	A1	7/2002	Hensley
6,708,176	B2	3/2004	Strunk et al.	2002/0087462	A1	7/2002	Stoutenburg et al.
6,721,713	B1	4/2004	Guheen et al.	2002/0087463	A1	7/2002	Fitzgerald et al.
6,732,916	B1	5/2004	Fazzano	2002/0087467	A1	7/2002	Muscavage et al.
6,732,922	B2	5/2004	Lindgren et al.	2002/0087469	A1	7/2002	Ganesan et al.
6,733,387	B2	5/2004	Walker et al.	2002/0088851	A1	7/2002	Hodes
6,736,314	B2	5/2004	Cooper et al.	2002/0091573	A1	7/2002	Hodes
6,738,689	B2	5/2004	Sansone	2002/0095387	A1	7/2002	Sosa et al.
6,745,327	B1	6/2004	Messing	2002/0099601	A1	7/2002	Farrell
6,760,711	B1	7/2004	Gillett et al.	2002/0099607	A1	7/2002	Sosa et al.
6,761,309	B2	7/2004	Stoutenburg et al.	2002/0103746	A1	8/2002	Moffett et al.
6,761,311	B1	7/2004	Algiene et al.	2002/0104026	A1	8/2002	Barra et al.
6,792,110	B2	9/2004	Sandru	2002/0107797	A1	8/2002	Combaluzier
6,801,833	B2	10/2004	Pinstov	2002/0111908	A1	8/2002	Milberger et al.
6,802,500	B2	10/2004	Bennett et al.	2002/0112236	A1	8/2002	Sukeda et al.
6,814,282	B2	11/2004	Seifert et al.	2002/0120514	A1	8/2002	Hagmeier et al.
6,827,260	B2	12/2004	Stoutenburg et al.	2002/0120582	A1	8/2002	Elston et al.
6,829,588	B1	12/2004	Stoutenberg et al.	2002/0120846	A1	8/2002	Stewart et al.
6,844,660	B2	1/2005	Scott	2002/0123926	A1	9/2002	Bushold et al.
6,847,947	B1	1/2005	Kambour et al.	2002/0123962	A1	9/2002	Bryman et al.
				2002/0128922	A1	9/2002	Joao
				2002/0143566	A1	10/2002	Diveley et al.
				2002/0143626	A1	10/2002	Voltmer et al.
				2002/0143706	A1	10/2002	Diveley et al.

(56)

## References Cited

## U.S. PATENT DOCUMENTS

2002/0143709	A1	10/2002	Diveley et al.		2004/0068437	A1	4/2004	McGee et al.
2002/0147600	A1*	10/2002	Waters et al.	705/1	2004/0078327	A1	4/2004	Frazier et al.
2002/0152168	A1	10/2002	Neofytides et al.		2004/0083170	A1	4/2004	Bam et al.
2002/0152176	A1	10/2002	Neofytides et al.		2004/0088248	A1	5/2004	Cutler
2002/0153414	A1	10/2002	Stoutenburg et al.		2004/0088261	A1	5/2004	Moore et al.
2002/0156683	A1	10/2002	Stoutenburg et al.		2004/0098326	A1	5/2004	James et al.
2002/0161702	A1	10/2002	Milberger et al.		2004/0098328	A1	5/2004	Grant et al.
2002/0166891	A1	11/2002	Stoutenburg et al.		2004/0098335	A1	5/2004	Michelsen
2002/0169719	A1	11/2002	Diveley et al.		2004/0107165	A1	6/2004	Blair et al.
2002/0174016	A1	11/2002	Cuervo		2004/0117302	A1*	6/2004	Weichert et al. 705/40
2002/0174334	A1	11/2002	Meadow et al.		2004/0118914	A1	6/2004	Smith et al.
2002/0184152	A1	12/2002	Martin		2004/0138947	A1	7/2004	McGee et al.
2002/0198806	A1	12/2002	Holm-Blagg et al.		2004/0138989	A1	7/2004	O'Malley
2003/0009382	A1	1/2003	D'Arbeloff et al.		2004/0139004	A1	7/2004	Cohen et al.
2003/0014371	A1	1/2003	Turgeon		2004/0139008	A1	7/2004	Mascavage et al.
2003/0023552	A1	1/2003	Kight et al.		2004/0143552	A1	7/2004	Weichert et al.
2003/0024979	A1	2/2003	Hansen et al.		2004/0148286	A1	7/2004	Rogers
2003/0028491	A1	2/2003	Cooper		2004/0153398	A1	8/2004	Baumgartner et al.
2003/0044043	A1	3/2003	Kaneda		2004/0158521	A1	8/2004	Newton et al.
2003/0047605	A1	3/2003	McClure et al.		2004/0158532	A1	8/2004	Breck et al.
2003/0053609	A1	3/2003	Risafi et al.		2004/0167821	A1	8/2004	Baumgartner
2003/0055689	A1	3/2003	Block et al.		2004/0167860	A1	8/2004	Baxter et al.
2003/0055780	A1	3/2003	Hansen et al.		2004/0186773	A1	9/2004	George et al.
2003/0061157	A1	3/2003	Hirka et al.		2004/0193487	A1	9/2004	Purcell et al.
2003/0061171	A1	3/2003	Gilbert et al.		2004/0193551	A1	9/2004	McGee et al.
2003/0065624	A1	4/2003	James et al.		2004/0193897	A1	9/2004	Van Volkenburgh
2003/0069856	A1	4/2003	Seifert et al.		2004/0210476	A1	10/2004	Blair et al.
2003/0085161	A1	5/2003	Smith et al.		2004/0210506	A1	10/2004	Algiene et al.
2003/0088552	A1	5/2003	Bennett et al.		2004/0210521	A1	10/2004	Crea et al.
2003/0105725	A1	6/2003	Hoffman		2004/0210523	A1	10/2004	Gains et al.
2003/0111529	A1	6/2003	Templeton et al.		2004/0211830	A1	10/2004	Algiene
2003/0120571	A1	6/2003	Holm-Blagg		2004/0211831	A1	10/2004	Stoutenburg et al.
2003/0120777	A1	6/2003	Thompson et al.		2004/0254833	A1	12/2004	Algiene et al.
2003/0126036	A1	7/2003	Mascavage et al.		2004/0260607	A1	12/2004	Robbins et al.
2003/0126075	A1	7/2003	Mascavage et al.		2005/0004702	A1	1/2005	McDonald
2003/0126083	A1	7/2003	Seifert et al.		2005/0017607	A1	1/2005	Weinberger
2003/0130907	A1	7/2003	Karas et al.		2005/0077744	A1	4/2005	Bennett et al.
2003/0130940	A1	7/2003	Hansen et al.		2005/0097037	A1	5/2005	Tibor
2003/0130948	A1	7/2003	Algiene et al.		2005/0107152	A1	5/2005	McGee et al.
2003/0135438	A1	7/2003	Blagg et al.		2005/0108127	A1	5/2005	Brown
2003/0135459	A1	7/2003	Abelman et al.		2005/0125360	A1	6/2005	Tidwell et al.
2003/0135740	A1	7/2003	Talmor et al.		2005/0137986	A1	6/2005	Kean
2003/0145205	A1	7/2003	Sarcanin		2005/0159993	A1	7/2005	Kordas et al.
2003/0149662	A1	8/2003	Shore		2005/0167481	A1	8/2005	Hansen et al.
2003/0154164	A1	8/2003	Mascavage et al.		2005/0173520	A1	8/2005	Jaros et al.
2003/0158818	A1	8/2003	Goerge et al.		2005/0180550	A1	8/2005	McGee et al.
2003/0163417	A1	8/2003	Cachey et al.		2005/0187929	A1	8/2005	Staggs
2003/0167231	A1	9/2003	Winking et al.		2005/0209958	A1	9/2005	Michelsen
2003/0167237	A1	9/2003	Degen et al.		2005/0209961	A1	9/2005	Michelsen
2003/0168510	A1	9/2003	Allen		2005/0211760	A1	9/2005	Dewan et al.
2003/0171992	A1	9/2003	Blagg et al.		2005/0261967	A1	11/2005	Barry et al.
2003/0177067	A1	9/2003	Cowell et al.		2005/0289024	A1	12/2005	Hahn-Carlson et al.
2003/0182218	A1	9/2003	Holm-Blagg		2006/0149667	A1	7/2006	Barry
2003/0182247	A1	9/2003	Mobed et al.		2006/0177061	A1	8/2006	Orsini et al.
2003/0187789	A1	10/2003	Karas et al.		2006/0193472	A1	8/2006	Yuen
2003/0187791	A1	10/2003	Weichert et al.		2006/0277144	A1	12/2006	Ranzini et al.
2003/0187792	A1	10/2003	Hansen et al.					
2003/0195811	A1	10/2003	Hayes et al.					
2003/0195842	A1*	10/2003	Reece	705/39				
2003/0208445	A1	11/2003	Compiano					
2003/0212620	A1	11/2003	Holm-Blagg					
2003/0212629	A1	11/2003	King					
2003/0222135	A1	12/2003	Stoutenburg et al.					
2003/0222136	A1	12/2003	Bolle et al.					
2003/0225689	A1	12/2003	MacFarlane et al.					
2003/0225708	A1	12/2003	Park et al.					
2003/0236728	A1	12/2003	Sunderji et al.					
2004/0002918	A1	1/2004	McCarthy et al.					
2004/0015438	A1	1/2004	Compiano					
2004/0024701	A1	2/2004	Hansen et al.					
2004/0030657	A1	2/2004	Holm-Blagg et al.					
2004/0049316	A1	3/2004	Pintsov et al.					
2004/0054622	A1	3/2004	Strayer et al.					
2004/0059672	A1	3/2004	Baig et al.					
2004/0065726	A1	4/2004	McGee et al.					

## FOREIGN PATENT DOCUMENTS

CA	1299291	4/1992
CA	2094281	4/1992
CA	2175473	5/1995
CA	2271178	7/1999
CA	2333692	10/1999
CA	2276641	12/2000
CA	2383173	1/2001
CA	2432025	6/2001
CA	2225427	12/2001
CA	2402993	7/2002
CA	2462398	12/2002
CA	2452958	1/2003
CN	101636949	1/2010
EP	0253240	1/1988
EP	481135	4/1992
EP	50234	5/1993
EP	700023	8/1995
EP	745961	4/1996
EP	725376	8/1996
EP	0933717	8/1999

(56)

**References Cited**

## FOREIGN PATENT DOCUMENTS

EP	0836727	B1	9/1999
EP	949596	A2	10/1999
EP	843292	A3	11/1999
EP	0987642	A2	3/2000
EP	1011060	A1	6/2000
EP	1077436	A2	2/2001
EP	1139252	A2	10/2001
EP	1232776	A2	8/2002
EP	2127172	A2	12/2009
FR	2728983	A1	7/1996
GB	2274349	A	7/1994
JP	02217990	A	8/1990
JP	09058451	A	2/1997
JP	09084951	A	3/1997
JP	09193580	A	7/1997
JP	10249052	A	9/1998
WO	9308546	A1	4/1993
WO	9626508	A1	8/1996
WO	9633385	A1	10/1996
WO	9638801	A1	12/1996
WO	9717212	A1	5/1997
WO	9743893	A1	11/1997
WO	9813794	A1	4/1998
WO	9849644	A1	11/1998
WO	9850875	A2	11/1998
WO	9806050	A	12/1998
WO	9922291	A1	5/1999
WO	9928872	A1	6/1999
WO	9966436	A1	12/1999
WO	0021004	A	4/2000
WO	0022559	A1	4/2000
WO	0046725	A1	8/2000
WO	0054122	A2	9/2000
WO	0067177	A2	11/2000
WO	0079452	A2	12/2000
WO	0104816	A1	1/2001
WO	0104846	A1	1/2001
WO	0133522	A1	5/2001
WO	0139093	A1	5/2001
WO	0169347	A3	9/2001
WO	0175744	A1	10/2001
WO	0186600	A2	11/2001
WO	0192989	A2	12/2001
WO	0201469	A2	1/2002
WO	0205195	A1	1/2002
WO	0239368	A1	5/2002
WO	2004008372	A2	1/2004
WO	2004008399	A2	1/2004
WO	9421066	A1	9/2004
WO	2008/089090		7/2008

## OTHER PUBLICATIONS

U.S. Appl. No. 10/773,642, filed Feb. 6, 2004, Sgambati, et al.  
 US 6,460,019, 10/2002, Walker, et al. (withdrawn).  
 About Western Union: Company History; <http://www.payment-solutions.com/history.html>, 2005, 2 pages.  
 Aeromexico and Western Union Partner to Offer a Cash Payment Option for Booking Airline Tickets; 2004, Press Release, 2 pages.  
 American Express in New Ad Drive; 1990, American Banker, 1 page.  
 American Express Introduces Automated Money Order Dispenser; 1991, Professional Check Casher, 1 page.  
 American Express Money Orders, Travelers Cheques Now on Sale; 1936, Dots and Dashes, 2 pages.  
 American Express Unit Introduces State-Of-The-Art Automated Money Order Dispenser; 1990, Tri-State Food News, 1 page.  
 American Greeting Cards Click-Through; no date, 38 pages.  
 Amerinet, Inc., "Debit-It!—The Best Idea in Payment Systems Since the Credit Card", downloaded from website <http://www.debit-it.com/> on Feb. 7, 2000, 8 pages.  
 Amex aims expansion strategy at local currency exchanges; 1990, Crain's Chicago Business, 1 page.  
 Amex Money Order Dispenser; 1990, The Nilson Report, 1 page.

Amex tests Moneygram; 1990, Adnews, 1 page.  
 And a Nine-Second Money Order Dispenser; 1991, Post-News, vol. 17, No. 1, 1 page.  
 Andrejczak—DIALCG File—American Banker-v164-date May 17, 1999 pp. 2.  
 Announcing Quick Collect Online; 2002, Western Union's Professional Collector, 3 pages.  
 Annual Report of First Data Corporation; 1998, 3 pages.  
 Annual Report of First Data Corporation; 1999, 2 pages.  
 Annual Report of the President of the Western Union Telegraph Company; 1873, pp. 8-11.  
 Annual Report of the President of the Western Union Telegraph Company; 1874, pp. 8-11.  
 Annual Report of the Western Union Corporation; 1990, 4 pages.  
 Annual Report of the Western Union Telegraph Company, 1975, 3 pages.  
 Annual Report of the Western Union Telegraph Company; 1935, 2 pages.  
 Annual Report of the Western Union Telegraph Company; 1940, pp. 9 and 22.  
 Annual Report of the Western Union Telegraph Company; 1947, 2 pages.  
 Annual Report of the Western Union Telegraph Company; 1949, 2 pages.  
 Annual Report of the Western Union Telegraph Company; 1951, 2 pages.  
 Annual Report of the Western Union Telegraph Company; 1953, 2 pages.  
 Annual Report of the Western Union Telegraph Company; 1954, 3 pages.  
 Annual Report of the Western Union Telegraph Company; 1973, 5 pages.  
 Annual Report of the Western Union Telegraph Company; 1974, 2 pages.  
 Annual Report of the Western Union Telegraph Company; 1978, 2 pages.  
 Annual Report of the Western Union Telegraph Company; 1981, 2 pages.  
 Anonymous: "Payment Systems: Western Union Service for Overdue Accounts Resolving Delinquent Cards," Card News, Potomac: Aug. 13, 1990, vol. 5, Iss 15, p. 4.  
 Anonymous: "Western Union Service Growing" Bank Letter, New York: May 28, 1990, vol. 14, Iss 21, p. 8.  
 Arthas Corp., dotBank, The Way to Send and Receive Money on the Internet, downloaded from website [dotbank.com](http://dotbank.com) on Feb. 7, 2000.  
 Arthur, Dwight, "AADS Option for Buyer Authentication", Response to NACHA/IC ANt2 RFI; 2 pages; Sep. 14, 1998.  
 AT&T Wireless to Offer Western Union SwiftPay as Replenishment Option for AT&T Free2Go Wireless Prepaid Customers; 2001, PR Newswire Association, 2 pages.  
 Author Unknown "PayPal News", [www.andrys.com/paypal.html](http://www.andrys.com/paypal.html), published prior to 2003, 3 pages.  
 Author Unknown "PayPal.com Case Study" <http://fox.rollins.edu/~slackman/paypal.htm>, 2001, 6 pages.  
 Behind the Scenes of Life; 1996, First Data Corporation Annual Report, 3 pages.  
 Bidpay.com: Whois search results; 2003, [http://www.networksolutions.com/en\\_US/whois/results.jhtml;jsessionid=VZDZVYDD1J](http://www.networksolutions.com/en_US/whois/results.jhtml;jsessionid=VZDZVYDD1J), 2 pages.  
 BidPay: Seller FAQs—Receiving Payments and Using the Money Order Service; 1999-2003, 7 pages.  
 billserv.com Launches bills.com, an internet Portal for Consumers to Pay All Bills Online at no Cost; 2000, Business Wire, 2 pages.  
 Boneh, Dan "Beaming Money by Email is Web's Next killer App", PR Newswire, Nov. 16, 1999, pp. 1-4.  
 Business Wire, "E-Commerce, Email and E-greeting Cards Combine in New Web Site Designed by Interactive Bureau", Sep. 14, 1999 (abstract), [online] [retrieved on May 1, 2002], retrieved from PROQUEST Database, 2 pages.  
 Candygram payment service, no date, 1 page.  
 CES/NaBANCO Introduces Stored Value Card Technology: Blockbuster Video is First Merchant Partner; 1996, First Data Corporation News Release, 3 pages.

(56)

**References Cited****OTHER PUBLICATIONS**

Collect your delinquent accounts by Telegraph; 1933, Form 1229-A, 1 page.

Collection by Money Transfer: MoneyGram Service Removes Time-Consuming Steps to Commercial Collections; 1990, Collector, p. 36.

Common Values: Uncommon Opportunities; 1995, First Data Corporation Annual Report, 2 pages.

Company Profile: The Western Union Convenience Pay Service; 2004, 4 pages.

Concord EFS, Inc. brochure entitled "Risk Management Services: IDLogix C100 Handheld Terminal-Detecting Invalid and Counterfeit Identification", published on or before 2005, 4 pages.

Concord EFS, Inc. brochure entitled "Risk Management Services", published on or before 2005, 8 pages.

Confinity, Inc. "PayPal for the Palm", [www.handheldnew.com/file.asp?ObjectID=5401](http://www.handheldnew.com/file.asp?ObjectID=5401), published prior to Oct. 2003, 2 pages.

Confinity, Inc., PayPal.com, How PayPal.com Works, download from website <http://www.paypal.com> on Feb. 7, 2000, 7 pages.

Cornwell, Ted: "Western Union Reports Growth in Late payment Collection Service." National Mortgage News. New York. May 5, 1997. vol. 21; p. 64.

DOTBANK, "The Way to Send and Receive Money on the Internet," download from website <http://www.dotbank.com>, Feb. 7, 2000, 6 pages.

Dots and Dashes; 1935, vol. 11, No. 9, 4 pages.

FDR to Offer HNC Software's Real-Time Fraud Detection: New distribution Agreement to Benefit Card Banks; 1996, First Data Resources News Release, 3 pages.

Federal Benefits Checks are Going Away—Don't Let Your Customers Go with Them: Announcing the Western Union Benefits Quick Cash Program; 4 pages.

First Data Acquires PaySys International; 2001, Press Release, 2 pages.

First Data Aligns with CyberCash to Offer New Electronic Coin Service; 1996, First Data Corporation News Release, 3 pages.

First Data and Netscape Announce Program to Help Businesses Establish Payment-Enabled Web Sites; 1996, First Data Corporation News Release, 5 pages.

First Data and Netscape Offering Internet Payment Processing Service; 1996, First Data Corporation News Release, 3 pages.

First Data InfoSource Offers Database Analysis with DecisionScope; 1996, First Data Corporation News Release, 2 pages.

First Data to Offer Card Profitability Software from HNC: Distribution Agreement Poised to Repeat Falcon Success; 1996, HNC Software, Inc. News Release, 3 pages.

First Data, First USA Paymentech, GE Capital Invest in First Virtual Holdings; 1996, First Virtual Holdings Corporation News Release, 3 pages.

First located example of a money transfer; Aug. 25, 1873, 1 page.

Gerin—Companies see huge demand for biometrics with TSA—Sep. 13, 2004—2 pages.

Get your Collect Card; 1939, Dots and Dashes, 2 pages.

Greenia—1952 Website [computermuseumli.com](http://computermuseumli.com)—Lexikon Services 1982 2002-2003 pp. 3.

Guess What? The check's not in the mail; 2001, Western Union's Professional Collector, 3 pages.

Guide to Internet Security; Public Key Cryptography, [http://www.e-certify.com/library/pkc\\_guide.htm](http://www.e-certify.com/library/pkc_guide.htm), 5 pages, printed date Feb. 18, 2003.

Hoffman, Karen Epper "PayPal Still Running Free, but the e-payments company's carefree days may be numbered if regulators decide it's essentially a bank" Bank Technology News, published between 2001-2003, [www.banktechnews.com/btn/articles/btnoct01-13.shtml](http://www.banktechnews.com/btn/articles/btnoct01-13.shtml), 3 pages.

How money by phone was paid; Money Transfer Service: Book of Rules and List of Offices; 1926, Western Union Telegraph Company, 3 pages.

Idealab Company, "PayMe.com," download from website <http://ssl.idealab.com> on Feb. 16, 2000, 7 pages.

If you're not getting your payment with Quick Collect, chances are you're not getting it; 2001, 2 pages.

Introducing the Western Union Cash Card Program; 1998, 2 pages.

It takes a certain person to make a good collector. But it takes a good manager to make a champion; 2001, Western Union's Professional Collector, 3 pages.

LaMacchia, Brian A., "Bal's PGP Public Key Server," <http://www.complaw.com/pgp/webkeyserver.html>, 2 pages, printed date Feb. 18, 2003.

Lan Airline Alliance Carriers and Western Union Offer Travelers Additional Payment Options; 2005, 3 pages.

Last of the Pony Express Riders Tells His Story; 1932, Dots and Dashes, vol. 8, No. 10, 2 pages.

Latour, Almar "PayPal Electronic Plan May be on the Money in Years to Come", The Wall Street Journal Interactive Edition, Nov. 15, 1999, downloaded from [www.paypal.com/html/wsj.html](http://www.paypal.com/html/wsj.html), 2 pages.

Lawton, George; "Biometrics: A New Era in Security", 1998, Computer, vol. 31, No. 8, pp. 16-18.

Leading Provider of Transaction Card Processing Selects Connect Onserver Software as a Solution for Advanced Internet Merchant Services: First Data Chooses OneServer as an Application to Deliver the Internet to Banks and Merchants; 1996, press Release, 4 pages.

Levin, Gary; "Western Union not fading into sunset; new services are added as telegrams drop"; 1992, 2 pages.

Linn, John, "Trust Models and Management in Public-Key Infrastructures," RSA Laboratories, 13 pages, Nov. 6, 2000.

List of Prepaid Services; <http://www.westernunion.com/info/osComparePrePaid.asp>, 1 page.

Loved one stranded? Send Cash; 1991, Akron Beacon Journal, 2 pages.

Luxury Brands LLC: World Famous Brands at Liquidation Prices; <http://www.auctionbytes.com/cab/pages/payment>, 3 pages.

McEnaney—DIALCG File 01896530—Akron Beacon Journal—Jul. 12, 1997—3 Pages.

Messenger Work Full of Adventure, Excitement; 1933, Dots and Dashes, vol. 9, No. 11, 2 pages.

Money Order with confirmation; 1948, 1 page.

Money Orders by Phone; 1935, Fortune Magazine, 3 pages.

Money-wire giants battle for business: Currency exchanges wooed; 1991, Chicago Sun Times, 2 pages.

MoneyZap.com Greeting Card Process Flow; 2000, 2 pages.

Nation Receives Time Over Western Union Network; 1931, Dots and Dashes, vol. 7, No. 5, 2 pages.

Nationwide Credit Collectors Act Globally; 2001, Western Union's Professional Collector, 3 pages.

Netscape Announces Netscape Livepayment to Facilitate Internet Commerce; 1996, Netscape News Release, 4 pages.

New Western Union SwiftPay Service Continues Expansion of Consumer-to-Business Payment Options; 1999, PR Newswire Association, 2 pages.

NTS Completes Merger with EDS Fleet Services; New First Data Unit Sets Sights on New Markets; 1996, NTS Press Release, 3 pages.

Only Western Union, no date, 2 pages.

PayPal for the Palm; <http://handheldnews.com/file.asp?ObjectID=5401>, Printed date Oct. 10, 2003; 2 pages.

PayPal.com Case Study; <http://fox.rollins.edu/~slackman/PayPal.htm>, 2003, 7 pages.

PayPal: The way to send and receive money online; 2002; 4 pages.

PayPal-News; <http://www.ndrys.com/paypal.html>, 2003, 3 pages.

PaySys—company overview, no date, 2 pages.

PaySys signs up four Asian distributors; 1997 Orlando Business Journal, 3 pages.

Picture of Bill payment form or advertisement, no date, 1 page.

Pilgrims Started Thanksgiving Custom; Dots and Dashes, vol. 4, No. 11, Nov. 1928, 2 pages.

Plotkin, Hal "Beam Me Up Some Cash" Silicon Valley Insider, Sep. 8, 1999, [www.halplotkin.com/cnbcs029.htm](http://www.halplotkin.com/cnbcs029.htm), 3 pages.

PR Newswire—Western Union Financial Services forms—Aug. 22, 1991.pdf.

Press Release: "Western Union Announces ATM Card Payout for Money Transfer Transactions"; 2001, URL: <http://news.firstdata.com/media/ReleaseDetail.cfm?ReleaseID=849995>.

(56)

**References Cited****OTHER PUBLICATIONS**

Primary Payment Systems, Inc. brochure entitled "Risk Management Services: Decision Check On-Site-Detecting Fraudulent Checks at the Point-of-Sale", 2003, 4 pages.

Primary Payment Systems, Inc. brochure entitled "Deposit Check—Preventing Losses on . . . Checks and Other Payments at Financial Institutions", 2002, 2 pages.

Primary Payment Systems, Inc. brochure entitled "Risk Management Services: Decision Check-Preventing Check Losses at the Point-of-Presentment", 2003, 4 pages.

Primary Payment Systems, Inc. brochure entitled "Risk Management Services: Identity Check—Web and Developer Service", 2003, 4 pages.

Primary Payment Systems, Inc. brochure entitled "Risk Management Services: Identity Check-Detecting Fraud when Establishing New Relationships", 2003, 6 pages.

Products and Services from PaySys, no date, 2 pages.

Purchasing American Airlines Tickets Just Got Easier; 2005, 4 pages.

Quick Cash and Quick Collect: Western Union's money-movers; 1990, *Newsbriefs*, vol. 2, No. 1, 3 pages.

Quick Cash: A safe and reliable way to send funds around the world; <http://www.payment-solutions.com/quickcash.html>, 1 page.

Quick Collect Sales Presentation; Jan. 2004, 28 pages.

Quick Collect: Government/Child Support Agency Name, Training Guide; 2004, 8 pages.

Quick Collect; Western Union Training Guide; 2004, 10 pages.

Quick Pay: The Convenient and reliable way to receive payments from customers worldwide; <http://www.payment-solutions.com/quickpay.html>, 2005, 3 pages.

Refund of Money Transfers; 1913, *Journal of the Telegraph*, 2 pages.

Remittance for order sent via Western Union; 1933, 2 pages.

Reynolds Arcade was Western Union Birthplace; 1933, *Dots and Dashes*, vol. 9, No. 8, 2 pages.

Rhode Island becomes first state to accept child support payments at Western Union: Government Payment Leader govONE Solutions Adds Walk-in to Full Suite of Payment Options; 2002, 3 pages.

Rhode Island becomes first state to accept child support payments at Western Union: More than 50 Western Union Convenience Pay Agent Locations Offer New Level of Convenience to Rhode Island Residents Who Pay Child Support—; 2002, 3 pages.

SBC Communications adds Western Union Locations for Walk-in Customer Bill Payments; SBC News Release, Sep. 7, 2005, 2 pages.

Seifert—Method & System for Electronic Transfer—FDC 0167PUS—no date, 21 pages.

Send your payment using Western Union Quick Collect; Feb. 2, 2004 2 pages.

Send Your Utility Bill Payment from Here!; no date 3 pages.

Sending Cash in a Flash; 1990, *Travel & Leisure*, p. 42.

Sending Cash in a Flash: There are more ways to do it than you might think; 1991, 2 pages.

Shopping Order service and gift service; 1934, Western Union Telegraph Company, Money Order Book, 6 pages.

Signature Services: Helping financial institutions send funds faster; <http://www.payment-solutions.com/signature.html>, 205, 1 page.

State of Hawaii to Accept Child Support Payments at Western Union; 2004, 2 pages.

State of New York Banking Department: Staff Letters and Memoranda; 2000, <http://www.banking.state.ny.us/lo000718.htm>, 2 pages.

Steiner, Ina "PayPal Online Payment Service—Another Way to Pay for Auction Items" [www.auctionbytes.com](http://www.auctionbytes.com), Feb. 20, 2000, 4 pages.

Steiner, Ina: "Accepting Credit Cards When You Sell Items: ProPay and Billpoint Payment Services"; 2000 Auction Bytes, 4 pages.

Steiner, Ina: "BidPay.com Offers Click and Pay Service for buyers"; 2000, Auction Bytes, 4 pages.

Steiner, Ina: "Follow-up to BidPay Article"; 2000, Auction Bytes, 3 pages.

Stockel, Anna; "Securing Data and Financial Transactions"; 1995, Institute of Electrical and Electronics Engineers 29th Annual Conference, pp. 397-401.

Stoutenburg—Method & System for Performing Money Transfer Transactions—10-289802—no date, 30 Pages.

Stream, LiteNet, BBN, and KPMG Announce Industry-Wide Initiative to Enable Wide-Scale Software Electronic Commerce; 1996, News Release, 6 pages.

Survey of services; 1960, pp. 2-31.

The Western Union Telegraph Company: Delivery Department Instructions; 1926, Commercial Bulletin No. 9-A, 2 pages.

The Western Union Telegraph Company: Instructions for Receiving Clerks; 1929, Commercial Bulletin No. 37-A, 2 pages.

The Western Union Telegraph Company: Rules for Money Transfer Service; 1908, pp. 3-25.

The Yellow Blank is Correct for every social need; 1930, Western Union Booklet, 2 pages.

The Yellow Blank: When, Why, How to Use It; 1934, 5 pages.

To send a Quick Collect Payment; sample form, no date, 1 page.

Transfers require ID made by telegraph; 1895, *Tariff Book*, 4 pages.

TRANSPPOINT, "The Way to Pay Online", downloaded from website <http://www.transpoint.com/> on Feb. 10, 2000, 12 pages.

VeriFone Finance, "Fast, Low-Cost Transaction Automation at the Point of Service", Jan. 1999—2 pages.

VIPS Introduces MCSorce to Managed Healthcare Industry; 1996, VIPS Healthcare Information Systems News Release, 2 pages.

VisionPLUS Consumer Payment Solution Overview, no date, 2 pages.

Wermer, Sandra; "A million credit card transactions in five hours"; 1997, *Primeur*, 2 pages.

Western Union—Now, using our service is even more rewarding; no date, 4 pages.

Western Union—Quarterly Report 3rd Quarter 1975—4 pages.

Western Union—Some Quick Facts about Quick Collect; no date, p. 1.

Western Union and Continental Airlines Introduce New Quick and Easy Cash Payment Option When Booking Flights; Jan. 5, 2004, Press Release, 2 pages.

Western Union—BidPay—Buyer FAQs, 1999-2003, 7 pages.

Western Union Creates Phone Card with BLT Technologies; 1997, PR Newswire Association, 2 pages.

Western Union Financial Services Inc.: There's a lot to be said about the many advantages of the Quick Collect service. And look who's saying it; 1995, 4 pages.

Western Union Financial Services, Inc.: Benefits Quick Cash Agreement and Disclosure Statement; 1998, 2 pages.

Western Union Financial Services, Inc.: Cash Card Agreement and Disclosure Statement; 1998, 2 pages.

Western Union Gift Greetings; no date, 6 pages.

Western Union Hotel-Motel Reservation Service, no date, 1 page.

Western Union Money Orders More Popular Than Ever: 1942, *Dots and Dashes*, vol. 18, No. 3, 2 pages.

Western Union Money Transfer & more—Printed date Jun. 10, 2003, 9 pages.

Western Union Money Transfer Services, Send Money Online, Money Orders, Send Telegrams; <http://www.westernunion.com/info/osCompareMoneyMessage.asp>, 2005, 3 pages.

Western Union New Supplement: Money Orders delivery through Mailgram: 1975, 2 pages.

Western Union News Supplement: Automatic travelers checks using Western Union; 1975, 2 pages.

Western Union Payment Services, Bidpay and Quick Collect, Online Bill Payment, Online Auction Payments; <http://www.westernunion.com/info/osComparePayment.asp>, 2005, 2 pages.

Western Union Products and Services: a brief description; 1960, 22 pages.

Western Union Quick Collect: First Data Corporation; 2000-2001, 2004; 2 pages.

Western Union Quick Collect: The Fastest way to collect good funds; 1999, 11 pages.

Western Union Quick Collect: The most agents, the most locations, the most experienced; 2000, 2 pages.

Western Union Quick Collect; 3 Easy Ways to Send a Payment: In Person, Online or by Phone!; no date, 2 pages.

(56)

**References Cited**

**OTHER PUBLICATIONS**

Western Union SwiftPay Selected by Sheakley Uniservice to Complete W-2 Reprint Transactions; 2000, PR Newswire Association, 2 pages.

Western Union Telegraph Company; 1933, Money Order Message, 17 pages.

Western Union/Money Zap: Send and receive money easily over the internet; <http://www.moneyzap.com/main.asp>, printed Dec. 1, 2000, 23 pages.

Western Union's Would-Be Rival; 1990, American Banker, 1 page.

When you're helping a customer make a crucial payment there's no room for guesswork; 2002, Western Union's Professional Collector, 3 pages.

Why Send Your Customers Across Town When You Can Send Them Next Door? 2005, 1 page.

Wijnen, Rene "You've Got Money!", Bank Technology News, Jun. 2000, pp. 1-4, vol. 13, Issue 6, New York.

x.com, "Do More with Your Money," download from website <http://www.x.com>, 5 pages, Feb. 7, 2000.

XP-002347909—Western Union Announces ATM Card Payout for Money Transfer Transactions—Oct. 22, 2001 p. 1.

You're sending more than a payment: Point-of-Sale & Merchandising Support Advertising Materials, no date, 2 pages.

You're sending more than a payment: You're sending peace of mind; 2004, 3 pages.

International Search Report and Written Opinion of PCT/US2008/050902, mailed on Aug. 15, 2008, 9 pages.

\* cited by examiner

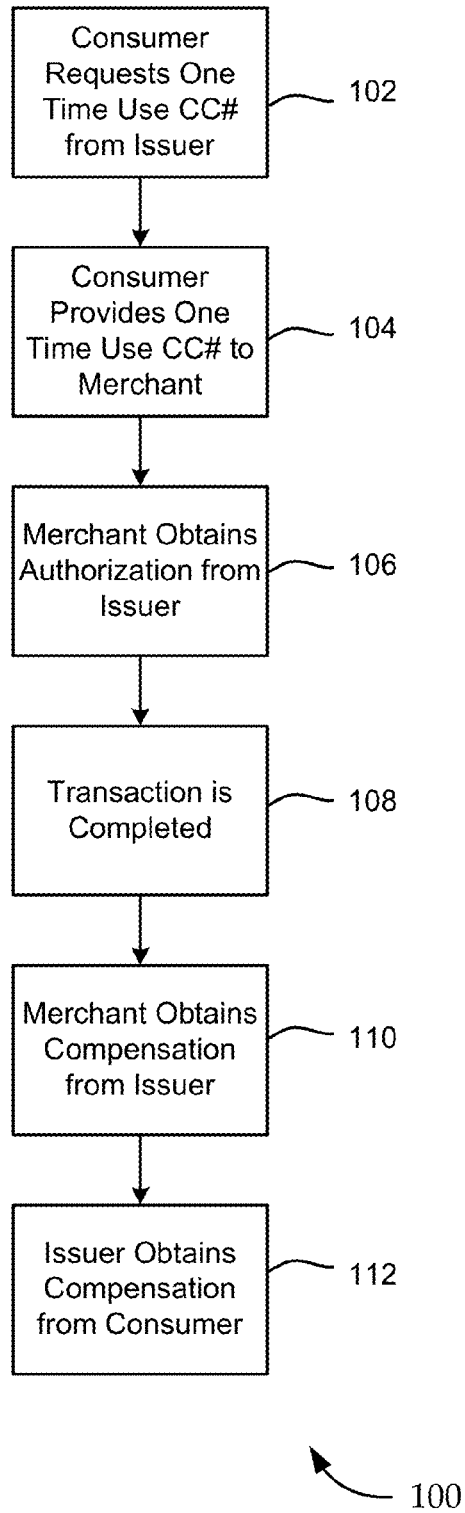


FIG. 1A

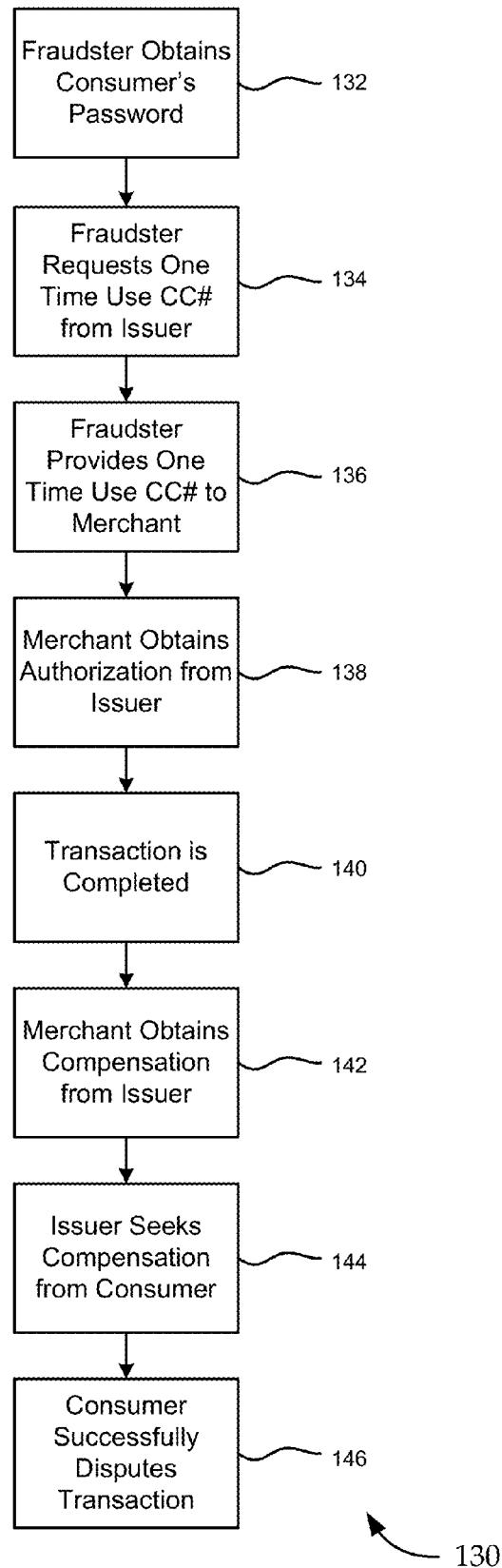


FIG. 1B

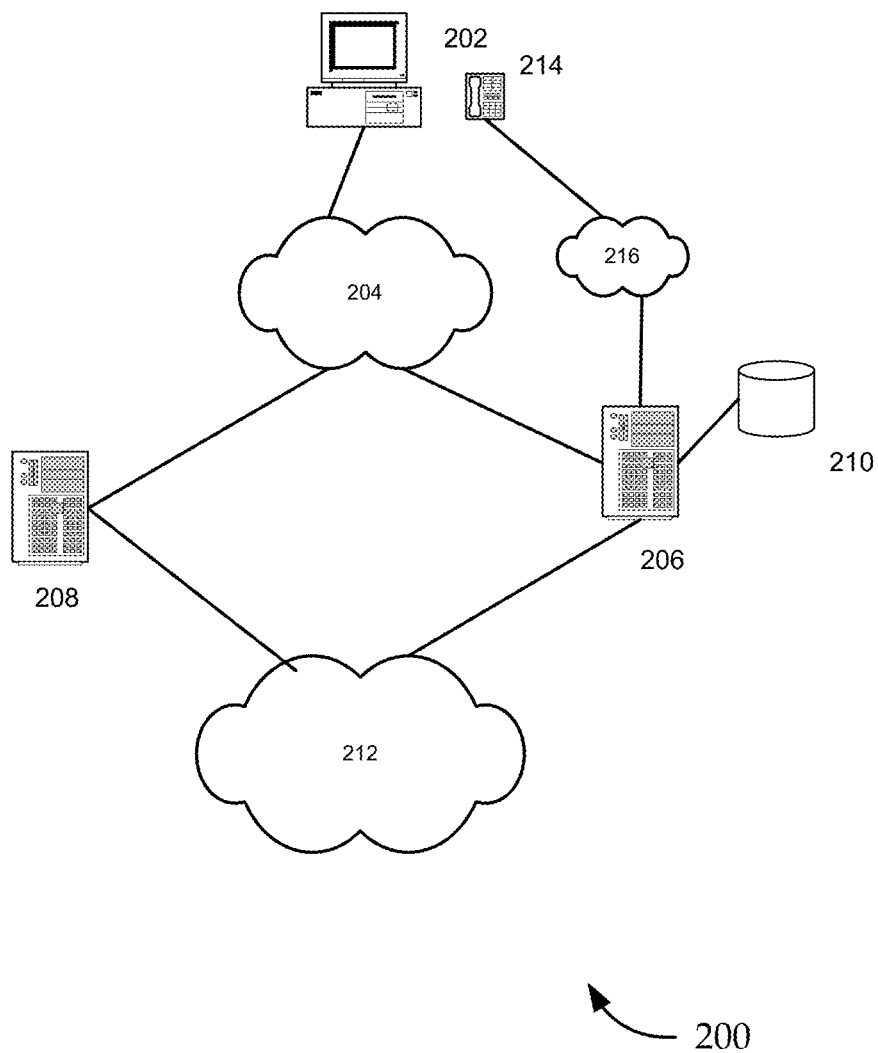


FIG. 2

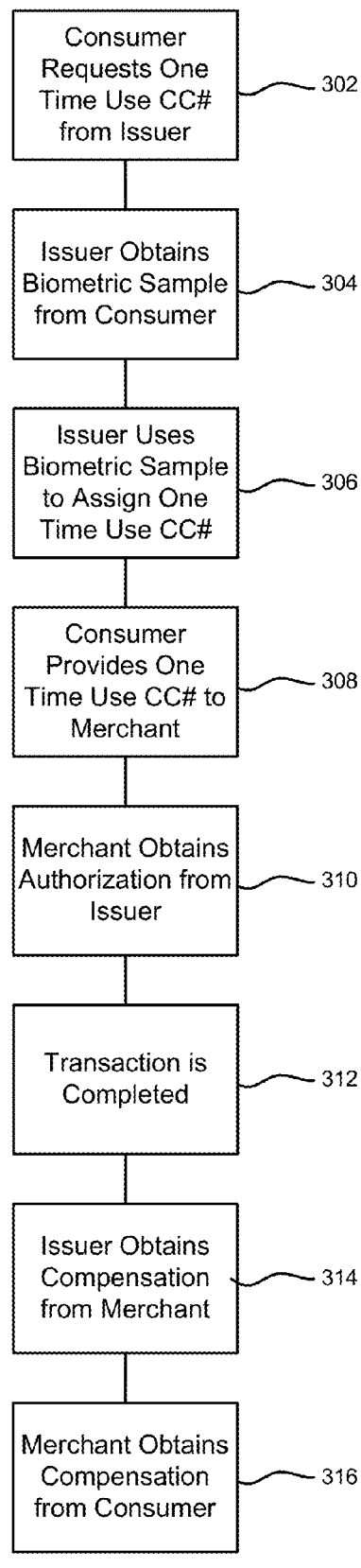


FIG. 3A

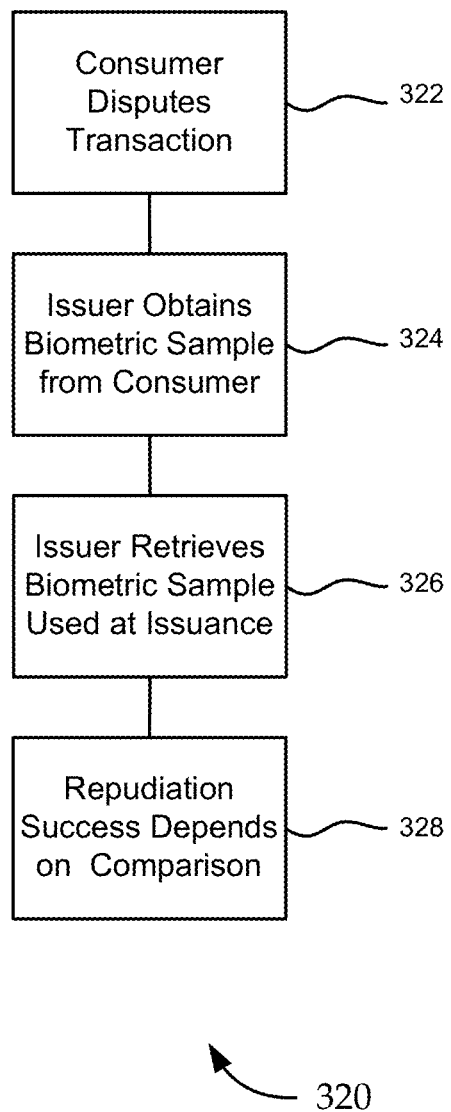


FIG. 3B

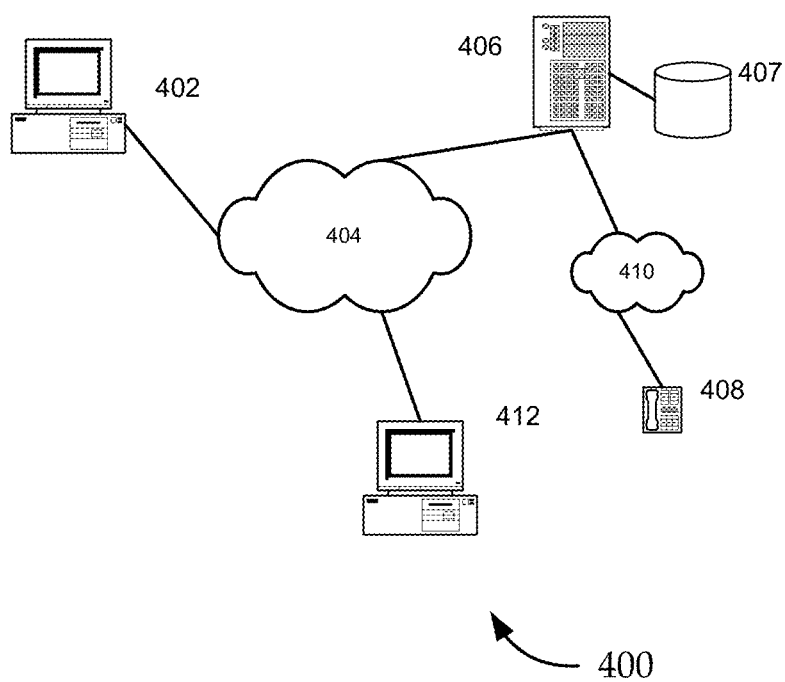


FIG. 4A

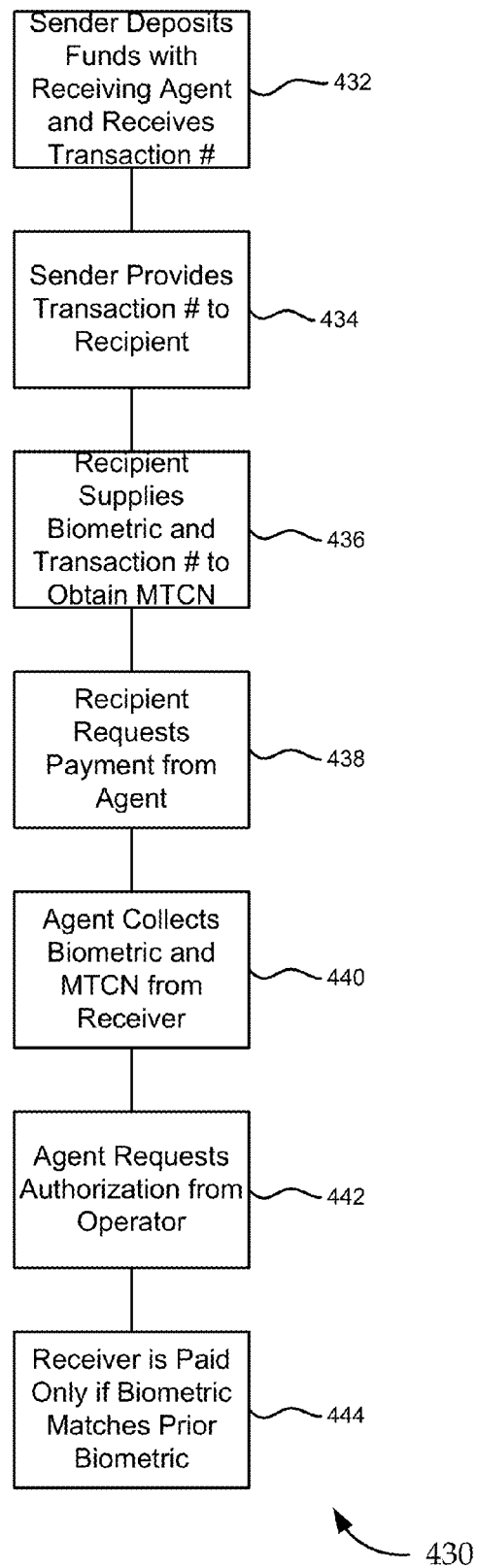


FIG. 4B

Record #	One Time CC#	Assignment Table Pointer
000,000,001	4891-3280-4378-2190	
000,000,002	1367-9329-4275-0183	
000,000,003	3740-1480-9642-4473	
.	.	.
.	.	.
.	.	.
005,000,001	9416-3551-8814-0178	532

FIG. 5A

500

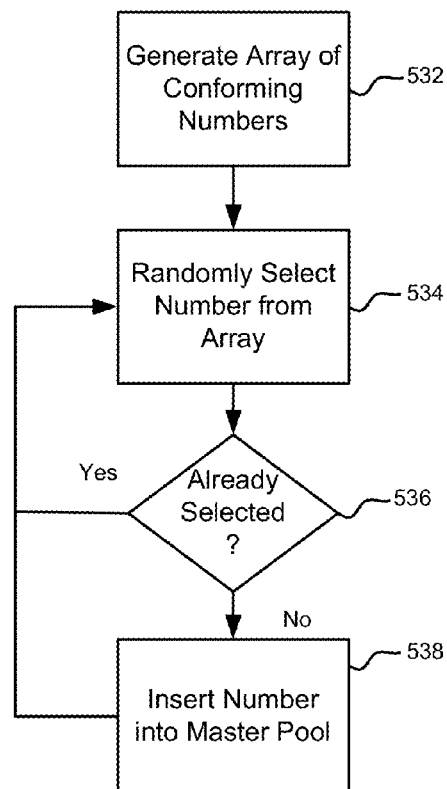


FIG. 5B

530

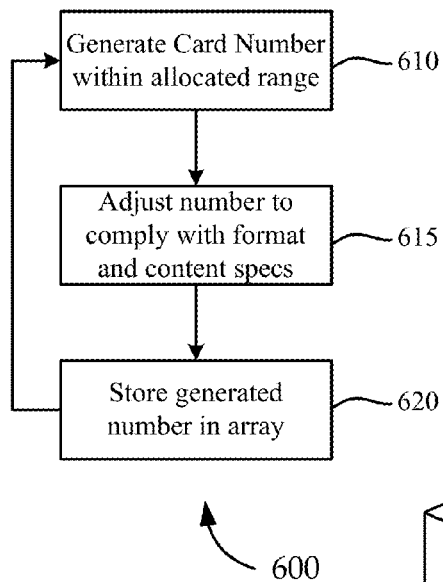


FIG. 6A

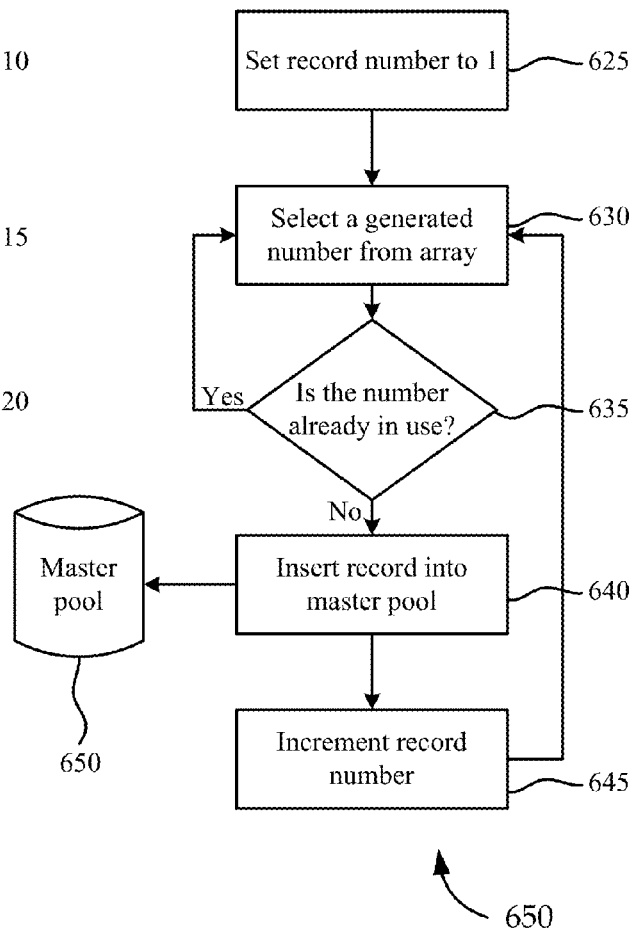


FIG. 6B

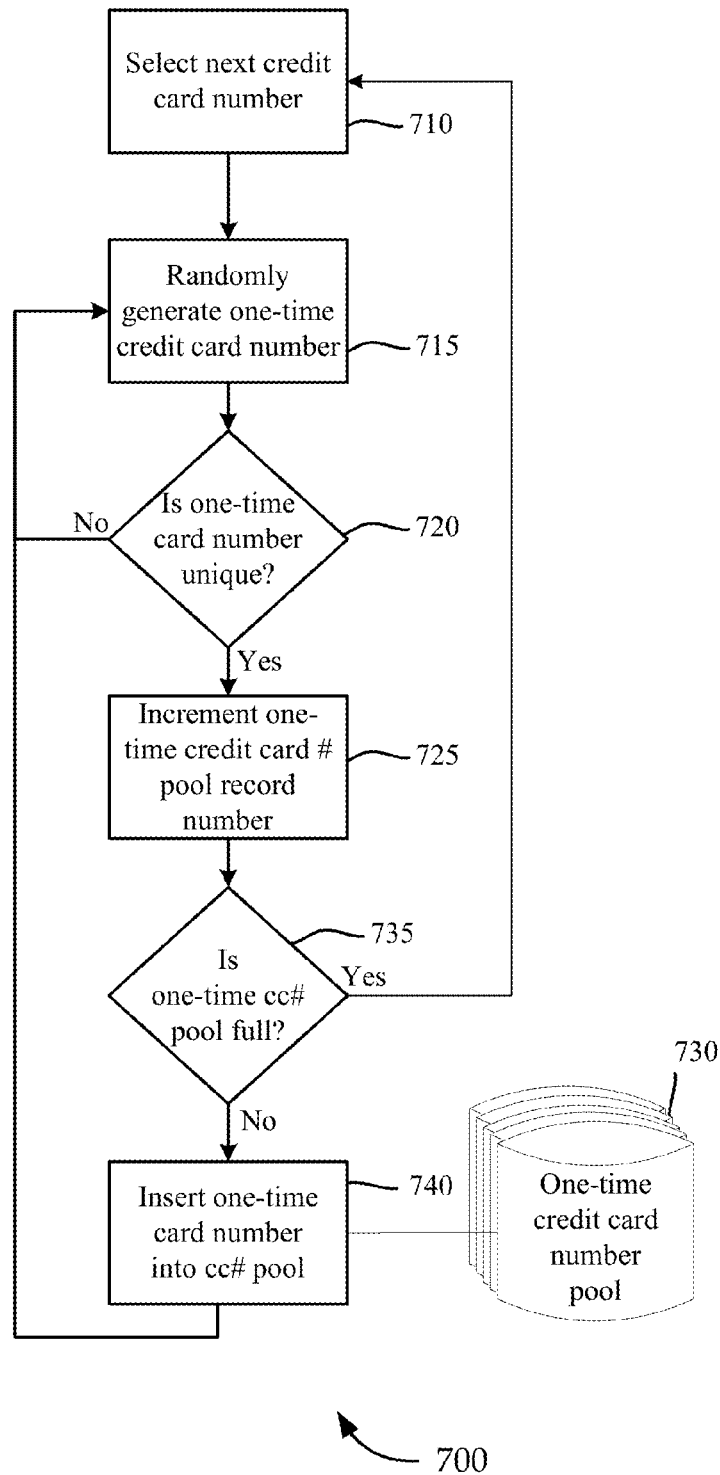


FIG. 7

Key	Record #	Real CC#	Usage Conditions	Previous Pointer	Next Pointer
	438,028,138	4891-3280-4378-2190			
	000,000,002	1367-9329-4275-0183			
	000,000,003	3740-1480-9642-4473			
	.	.		.	
	.	.		.	
	.	.		.	
	005,000,001	9416-3551-8814-0178			

802

800

FIG. 8

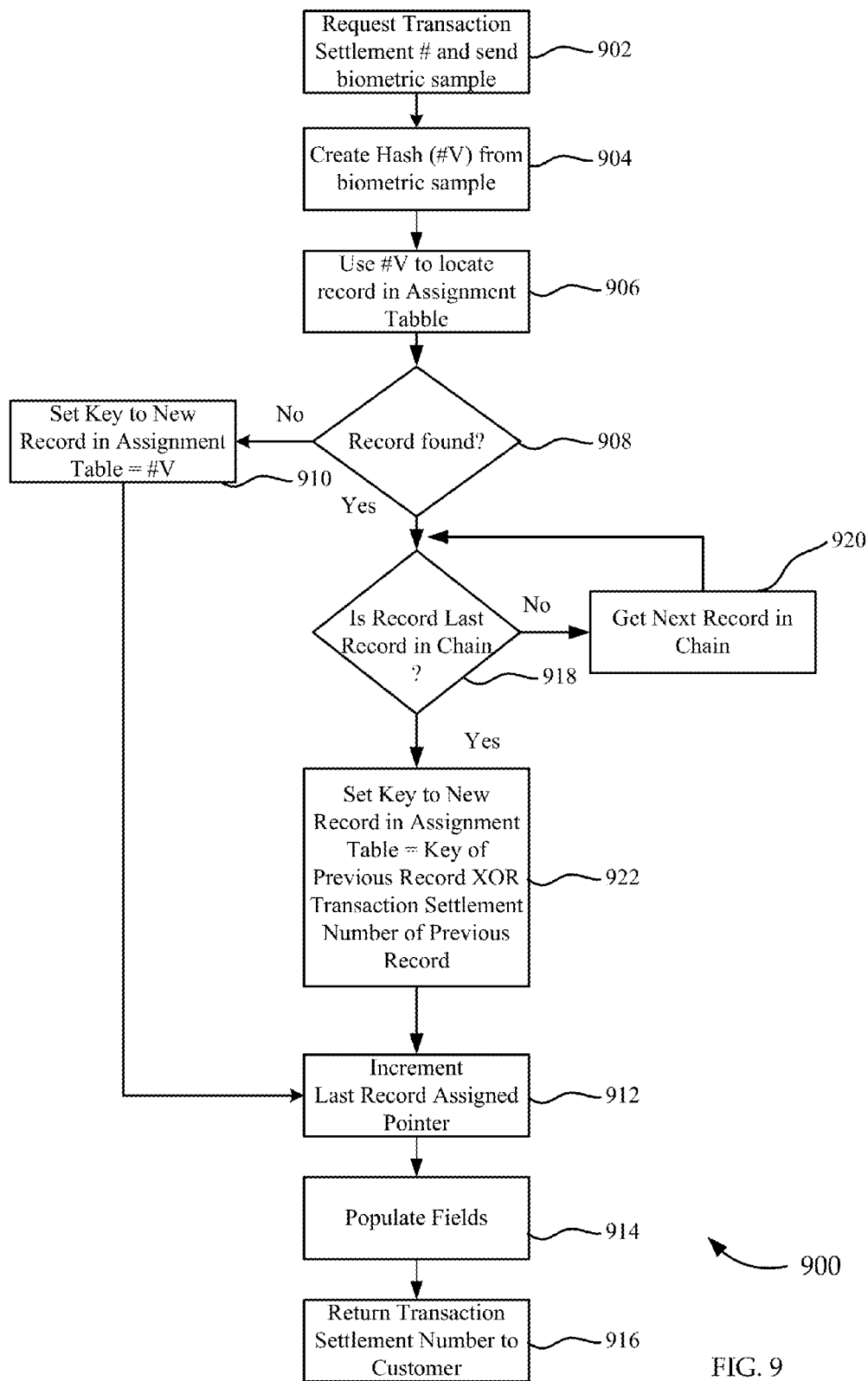


FIG. 9

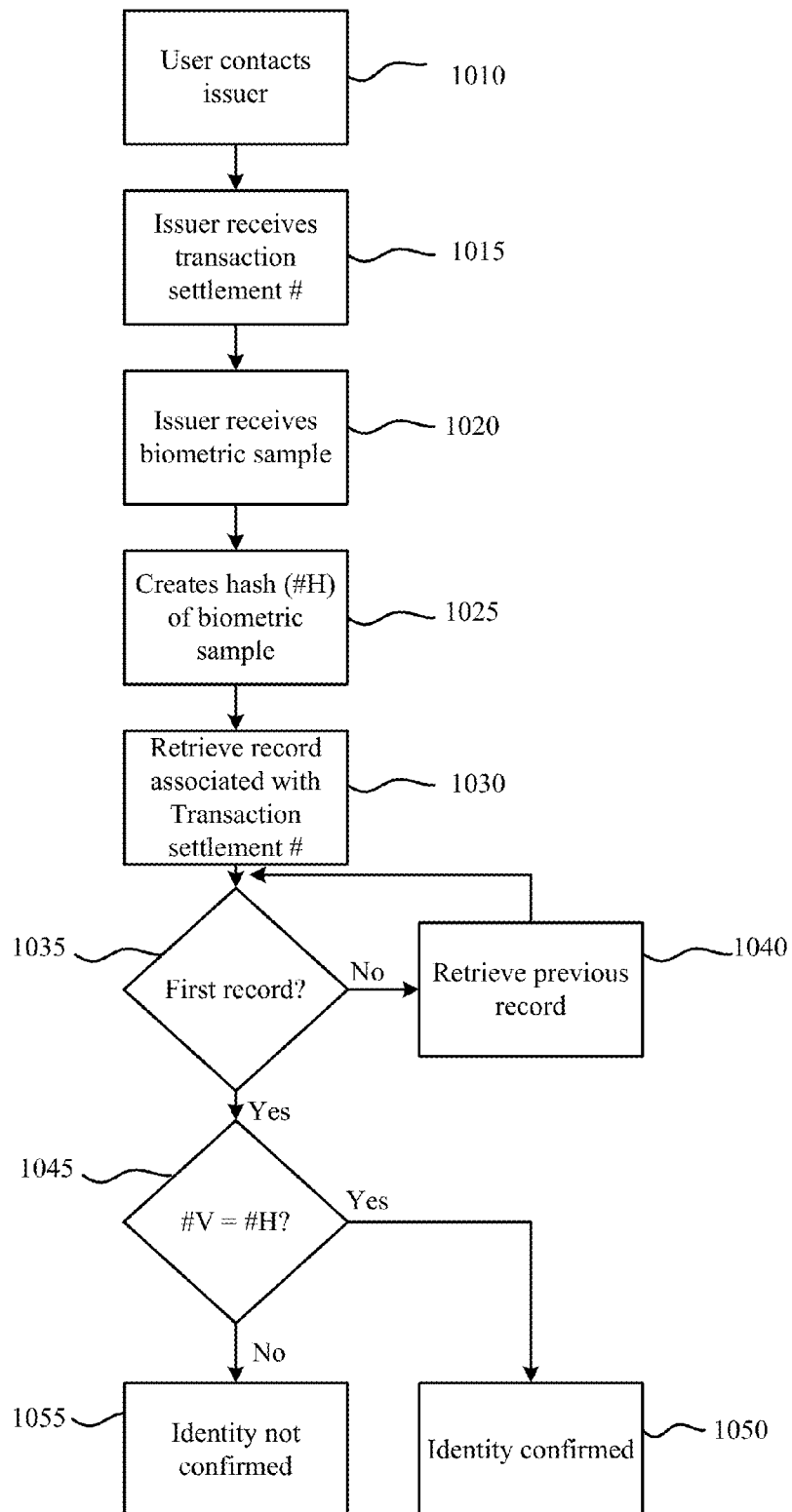


FIG. 10

1000

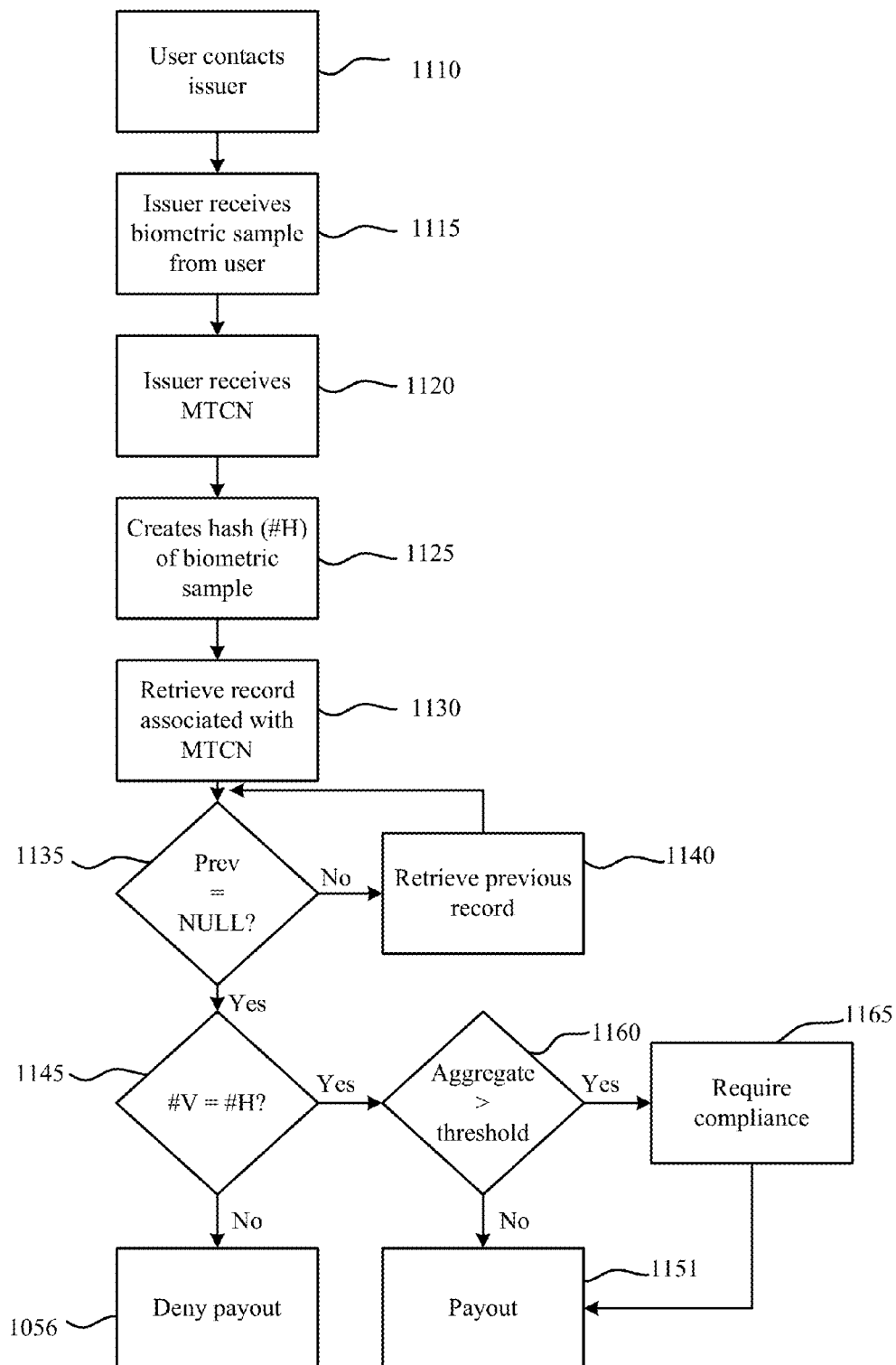


FIG. 11

1100

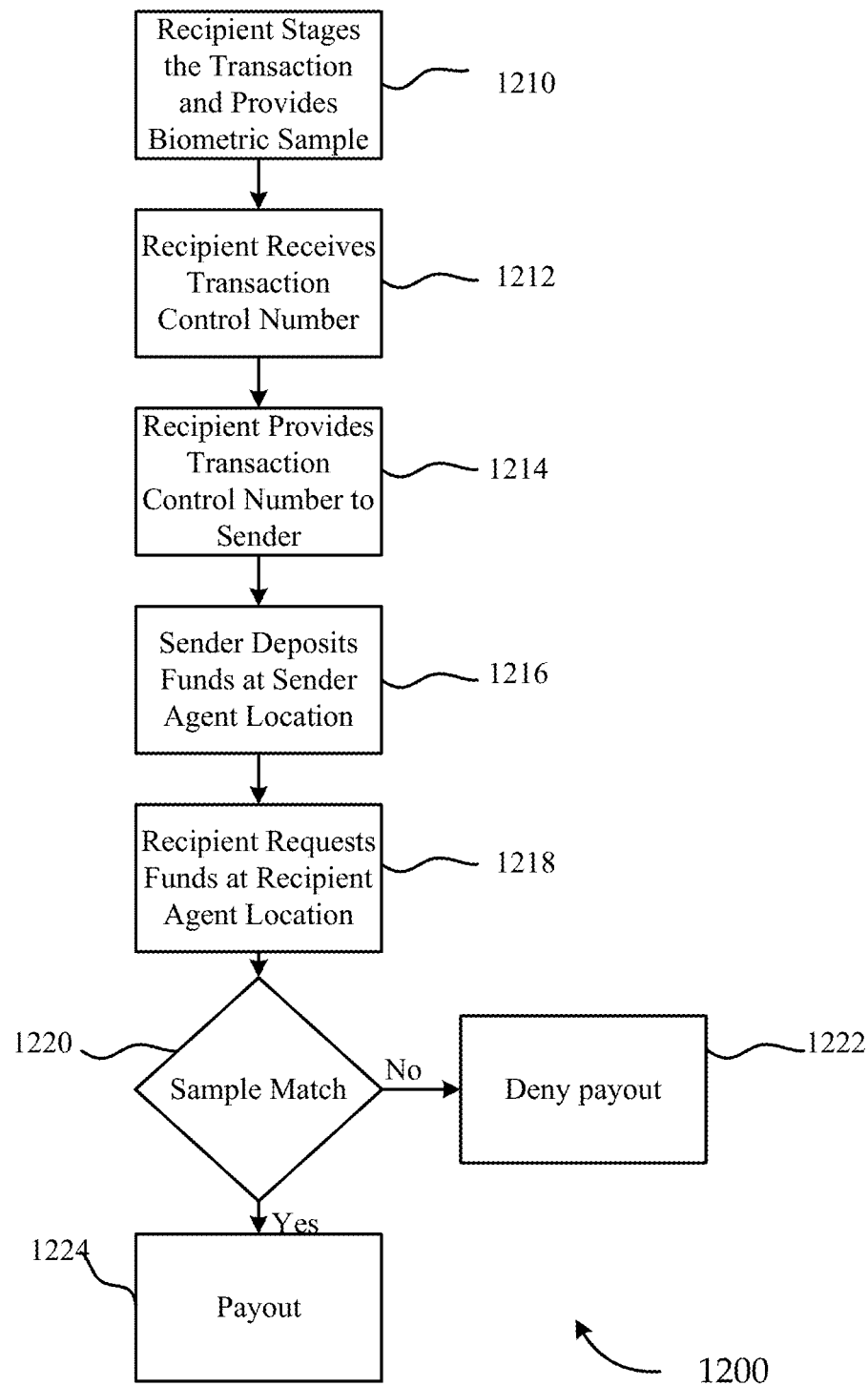


FIG. 12

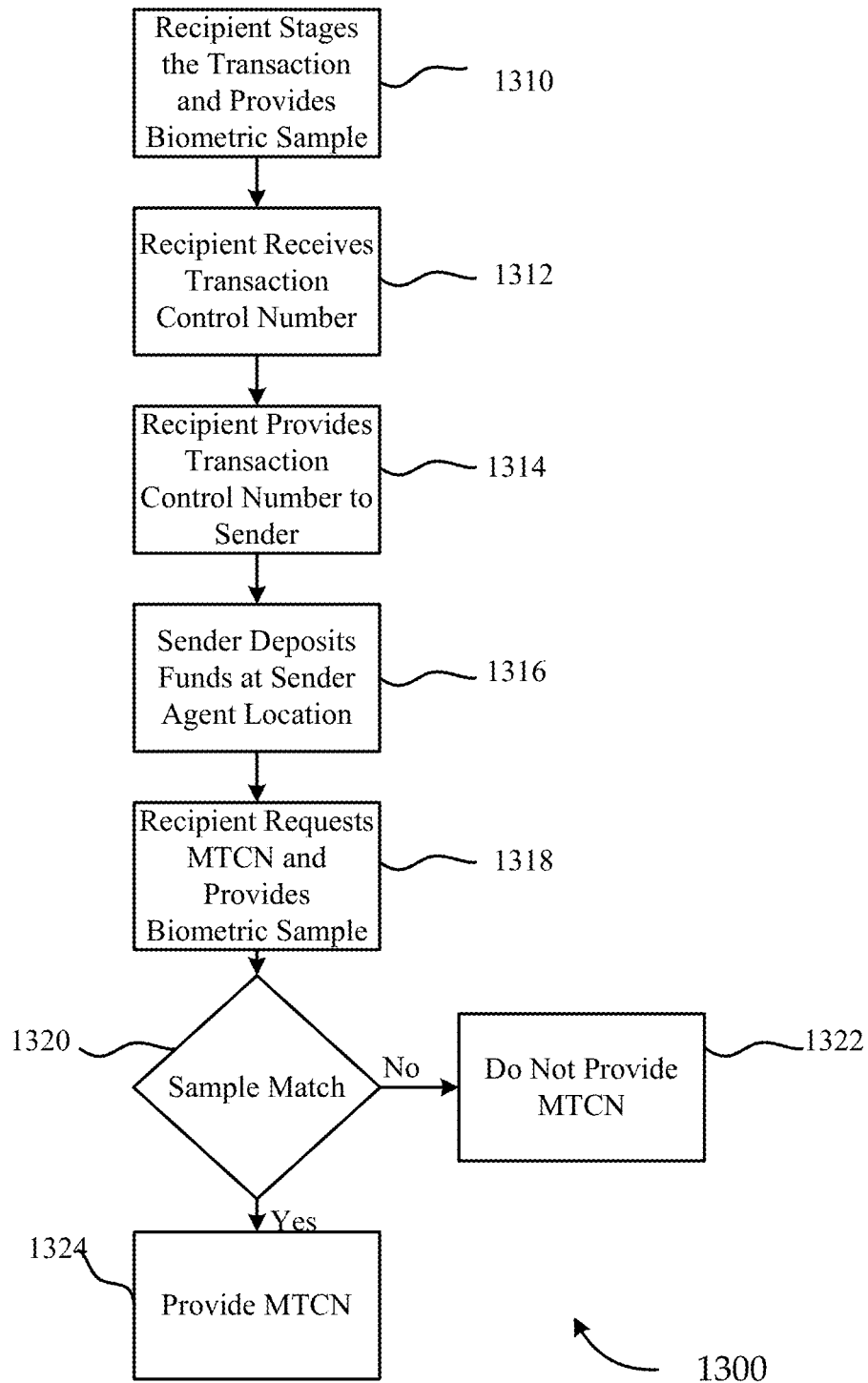


FIG. 13

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# GENERATION SYSTEMS AND METHODS FOR TRANSACTION IDENTIFIERS HAVING BIOMETRIC KEYS ASSOCIATED THEREWITH

## CROSS-REFERENCES TO RELATED APPLICATIONS

This application is a continuation of U.S. patent application Ser. No. 11/623,956, filed on Jan. 17, 2007, entitled "GENERATION SYSTEMS AND METHODS FOR TRANSACTION IDENTIFIERS HAVING BIOMETRIC KEYS ASSOCIATED THEREWITH", which is hereby incorporated herein by reference.

## FIELD OF THE INVENTION

Embodiments of the present invention relate generally to transaction settlement identifier generation systems and methods. More specifically, embodiments of the present invention relate to systems and methods for generating transaction settlement identifiers using biometric features.

## BACKGROUND OF THE INVENTION

Fraud in eCommerce transactions has become a significant problem. Credit card issuers have created the "surrogate card number" model in an attempt to address this problem. According to this model, a "one time" credit card number is generated by a credit card issuer and automatically mapped back (by the issuer system) to the original card number during any subsequent authorisation, capture or refund event. The original card number is, therefore, never exposed and in the event the "one time" number is compromised (e.g. a hacker successfully penetrates the merchant's system) the fraud risk is mitigated as the "one time" number is deactivated for further purchase activity once the first authorisation event is processed.

While this model represents a significant improvement in online fraud management and has helped to establish consumer confidence in online commerce, it remains vulnerable to the threat of identity theft (commonly referred to as "phishing"). A variety of sophisticated techniques, including social engineering, are employed by fraudsters to discover consumer information (e.g. User Ids, passwords etc.) to enable them to perform seemingly valid transactions for fraudulent purposes. For example, in the "one time" card model, the fraudster would attempt to discover the consumer's password to enable the fraudster to request a valid "one time" credit card number to purchase goods online and have them shipped to a different address. Customers subsequently repudiate the transaction leaving the issuer in the position of adjudicator with consequential financial loss or reduction in customer satisfaction levels.

In essence the point of attack is starting to shift away from merchant's systems back to the issuer's systems. While the "surrogate card number" model is principally designed to effectively address merchant vulnerabilities, further expansion of the concept is needed to consider issuer side threats and vulnerabilities.

Likewise, fraud is a significant problem in money transfer transactions. Under typical practice, a sender visits an "agent" (i.e., agent of a money transfer system operator, such as Western Union of Englewood, Colo.) location to specify payee details (name, destination country and test question, if applicable) and pay applicable fees and principal amount to be transferred. The agent receipts the transaction details into

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a money transmission system and receives a Money Transfer Control Number ("MTCN") that uniquely references the transaction. The agent provides the MTCN to the sender. The sender advises the recipient (Payee) through independent means (e.g. phone call or SMS) of the transfer's availability for collection and the MTCN. The payee visits an agent location, and supplies the MTCN, appropriate identification and correct response to the test question (if applicable). The agent pays out the principal amount on successful completion of verification checks. Some of the foregoing steps may be performed by Internet-based means.

This model is vulnerable to a number of attacks. For example, a paying agent may collude with a fraudster and pay out funds without complying with local verification procedures. An unrelated agent in the paying country may also retrieve the transaction details from the money transfer software using limited search criteria and enable an accomplice to proceed with collection at a separate location in the expected payout country. Or, a number of fraudulently inclined individuals may present themselves simultaneously at different agent locations in the destination country of a transfer and all receive payout before the money transfer system is able to detect the problem.

Hence, a more robust payee authentication method is required at point of payout to secure the process from these attacks.

## BRIEF SUMMARY OF THE INVENTION

One embodiment of the invention provides for a transaction settlement identifier generation system. The system may include an arrangement configured to receive a biometric sample from a customer; an arrangement configured to use the biometric sample to select the transaction settlement identifier from a pool of predetermined transaction settlements; and a mapping arrangement configured to map the selected financial transaction settlement identifier to an identifier of the customer. The biometric sample may be a voiceprint, fingerprint, DNA sample, and/or a retinal scan. The transaction settlement identifier may be a one-time use credit card number.

Another embodiment of the invention provides a system for associating a biometric sample with a transaction settlement identifier. The system includes a storage arrangement adapted to store transaction settlement identifiers and keys; an input adapted to receive a biometric sample from a user; and a processor. The processor may be programmed to execute instructions to receive the biometric sample from a user through the input; instructions to use the biometric sample to select a transaction settlement identifier from a pool of predetermined transaction settlement identifiers; and instructions to thereafter use the transaction settlement identifier to settle a transaction. The processor may further have instructions to use the biometric sample to generate a first key; and instructions to store the first key and the transaction settlement identifier as a record. Processor instructions may further generate the first key by a cryptographic hashing of the biometric sample. The transaction settlement identifier may be a credit card number, a charge card number, a one-time use credit card number, a money transfer control number, a transfer authentication number, a transaction identifier, a debit card number, and/or a stored value card number. The biometric sample may be a voiceprint, a fingerprint, a retinal scan, and/or a DNA sample.

The processor may further include instructions to retrieve a second key associated with the transaction settlement identifier from the storage arrangement; and instructions to gener-

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ate the first key by mathematically combining the first key with a cryptographic hash of the transaction settlement identifier. The processor may include instructions to apply an exclusive disjunction operator on the second key and the cryptographic hash of the transaction settlement identifier. The processor may also include instructions to receive a request from a user for a transaction settlement identifier, wherein the transaction settlement identifier comprises a one-time-use credit card number; instructions to retrieve a one-time-use credit card number from a pool of one-time-use credit card numbers; and instructions to issue the one-time-use credit card number to the customer. The processor may further include instructions to generate a one-time credit-card number.

Another embodiment of the invention may provide for a method for associating a cryptographic hash of a physical sample with a financial identifier. The method may include receiving a first biometric sample from a user; using the biometric sample to select a transaction settlement identifier from a pool of predetermined transaction settlement identifiers; and using the transaction settlement identifier to settle a transaction. The method may also include generating a first key from the biometric sample; and assigning the first key to the transaction settlement identifier. Generating a first key may include retrieving a second key associated with the financial identifier from a database; and mathematically combining the previous key with the hash to create the first. A first key may be generated by applying an exclusive disjunction operation on the previous key and the hash. The method may also include receiving a request from a user for a financial identifier, wherein the financial identifier comprises a one-time-use credit card number; retrieving a one-time-use credit card number from a pool of one-time-use credit card numbers; and issuing the one-time-use credit card number to the customer. A one-time-use credit card number may also be generated.

The transaction settlement identifier may be an account number, a credit card number, a charge card number, a one-time-use credit card number, a money transfer control number, a transfer authentication number, a transaction identifier, a debit card number, and/or a stored value card number. The biometric sample may be a voiceprint, a fingerprint, a retinal scan, and/or a DNA sample.

#### BRIEF DESCRIPTION OF THE DRAWINGS

A further understanding of the nature and advantages of the present invention may be realized by reference to the remaining portions of the specification and the drawings wherein like reference numerals are used throughout the several drawings to refer to similar components. Further, various components of the same type may be distinguished by following the reference label by a dash and a second label that distinguishes among the similar components. If only the first reference label is used in the specification, the description is applicable to any one of the similar components having the same first reference label irrespective of the second reference label.

FIG. 1A depicts a typical purchase transaction in which a consumer uses a one-time-use credit card to complete a transaction with an online merchant according to one embodiment of the invention.

FIG. 1B depicts a purchase transaction in which a fraudster acquires account details from the consumer leaving the issuer unable to collect the transaction funds from the consumer according to one embodiment of the invention.

FIG. 2 illustrates an exemplary system according to one embodiment of the invention.

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FIG. 3A depicts an exemplary method according to one embodiment of the invention.

FIG. 3B depicts an exemplary repudiation process according to one embodiment of the invention.

FIG. 4A depicts an exemplary money transfer system according to one embodiment of the invention.

FIG. 4B depicts a money transfer method according to one embodiment of the invention.

FIG. 5A illustrates an exemplary master pool from which transaction settlement numbers may be selected according to one embodiment of the invention.

FIG. 5B depicts an exemplary method for populating a master pool according to one embodiment of the invention.

FIG. 6A depicts a method of generating an array of one-time-use credit card numbers according to one embodiment of the invention.

FIG. 6B depicts another method of generating a master pool of one-time-use credit card numbers according to one embodiment of the invention.

FIG. 7 depicts a method of generating an individual master pool of one-time-use credit card numbers for each credit card number according to one embodiment of the invention.

FIG. 8 depicts an assignment table according to embodiments of the present invention.

FIG. 9 depicts a method of assigning transaction settlement numbers from the master pool according to embodiments of the present invention.

FIG. 10 depicts a method of confirming the identity of user associated with a transaction settlement identifier according to one embodiment of the invention.

FIG. 11 depicts a method of confirming the identity of payee associated with a MTCN according to one embodiment of the invention.

FIG. 12 depicts a first exemplary method of a recipient-staged money transfer transaction.

FIG. 13 depicts a second exemplary method of a recipient-staged money transfer transaction.

#### DETAILED DESCRIPTION OF THE INVENTION

Embodiments of the present invention relate to systems and methods for assigning transaction settlement identifiers. In order to provide a context for describing embodiments of the present invention, embodiments of the invention will be described herein with reference to providing transaction settlement identifiers (aka "transaction settlement numbers") as one-time-use credit card numbers for purchase transactions and/or money transfer control number (MTCNs) for money transfer transactions. Those skilled in the art will appreciate, however, that other embodiments are possible. For example, embodiments of the invention may be used to provide brokerage account purchase and redemption transaction settlement numbers and the like.

The ensuing description provides preferred exemplary embodiment(s) only, and is not intended to limit the scope, applicability or configuration of the invention. Rather, the ensuing description of the preferred exemplary embodiment(s) will provide those skilled in the art with an enabling description for implementing a preferred exemplary embodiment of the invention. It is to be understood that various changes may be made in the function and arrangement of elements without departing from the spirit and scope of the invention as set forth in the appended claims.

Specific details are given in the following description to provide a thorough understanding of the embodiments. However, it will be understood by one of ordinary skill in the art that the embodiments may be practiced without these specific

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details. For example, systems may be shown in block diagrams in order not to obscure the embodiments in unnecessary detail. In other instances, well-known processes, structures and techniques may be shown without unnecessary detail in order to avoid obscuring the embodiments.

Also, it is noted that the embodiments may be described as a process which is depicted as a flowchart, a flow diagram, a data flow diagram, a structure diagram, or a block diagram. Although a flowchart may describe the operations as a sequential process, many of the operations can be performed in parallel or concurrently. In addition, the order of the operations may be re-arranged. A process is terminated when its operations are completed, but could have additional steps not included in the figure. A process may correspond to a method, a function, a procedure, a subroutine, a subprogram, etc. When a process corresponds to a function, its termination corresponds to a return of the function to the calling function or the main function.

Moreover, as disclosed herein, the term "storage medium" may represent one or more devices for storing data, including read only memory (ROM), random access memory (RAM), magnetic RAM, core memory, magnetic disk storage mediums, optical storage mediums, flash memory devices and/or other machine readable mediums for storing information. The term "computer-readable medium" includes, but is not limited to portable or fixed storage devices, optical storage devices, wireless channels and various other mediums capable of storing, containing or carrying instruction(s) and/or data.

Furthermore, embodiments may be implemented by hardware, software, firmware, middleware, microcode, hardware description languages, or any combination thereof. When implemented in software, firmware, middleware or microcode, the program code or code segments to perform the necessary tasks may be stored in a machine readable medium such as storage medium. A processor(s) may perform the necessary tasks. A code segment may represent a procedure, a function, a subprogram, a program, a routine, a subroutine, a module, a software package, a class, or any combination of instructions, data structures, or program statements. A code segment may be coupled to another code segment or a hardware circuit by passing and/or receiving information, data, arguments, parameters, or memory contents. Information, arguments, parameters, data, etc. may be passed, forwarded, or transmitted via any suitable means including memory sharing, message passing, token passing, network transmission, etc.

According to embodiments of the present invention, a biometric feature of an individual is used to generate a transaction identifier for subsequent use by the individual to complete a transaction. The transaction may be a purchase transaction, a money transfer transaction, or the like. The close association of the transaction identifier to the individual helps to minimize fraud associated with the transaction.

In the case of purchase transactions, a consumer provides a biometric sample to an issuer upon requesting the transaction identifier. The biometric sample may be a sample of any of a variety of biometric features of the consumer. For example, the consumer may provide a fingerprint, a voiceprint, DNA, retinal scan, or the like. Moreover, while embodiments of the present invention are described using a biometric feature of an individual to generate a transaction identifier, other physical identifiers may be used. For example, a PC signature or the keystroke dynamics of the user may be used. In such embodiments, the user may request a transaction identifier using a computer and use the PC signature or their keystroke dynamics to generate a transaction identifier. The PC signature or

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keystroke dynamics may be initiated locally by the user's computer or remotely through a network. Accordingly, while a biometric sample is used throughout the specification to describe embodiments of the invention, other physical identifiers uniquely identifying a user or user's system may be used to generate a transaction identifier.

The transaction identifier may be a one-time-use transaction identifier, such as a one-time-use credit card number, or the like. The issuer uses the biometric sample, or a function thereof (e.g., a hash), to select the transaction identifier from a large pool of transaction identifiers appropriate for the particular use. The consumer thereafter uses the transaction identifier to complete the transaction. In some cases, a second biometric sample is obtained from the consumer to authorize the transaction. In other cases, a second biometric sample is obtained only if the consumer attempts to repudiate the transaction.

In the case of money transfer transactions, a sender obtains a first transaction number upon depositing funds with a money transfer agent. The sender then provides the first transaction number to the desired recipient. The recipient then provides a biometric sample and the first transaction number to a money transfer system operator to receive a second transaction number (e.g., a MTCN, Money Transfer Control Number). The money transfer agent on the sender side, therefore, does not know the MTCN. The recipient then requests the funds deposited by the sender from a money transfer agent, which may be the same as the money transfer agent on the send side, but is most likely a different money transfer agent. At the time of request, the recipient provides the MTCN and a biometric sample. Only if the biometric sample matches the sample provided by the recipient to the money transfer system operator can the money transfer agent provide the funds. Hence, according to some embodiments, the transfer is protected from fraudulent collusion among money transfer agents since agents do not have access to transfer records using only an MTCN. Moreover, by providing a biometric sample at the time of receipt, a recipient is less able to claim not having received the funds. Further, embodiments of the present invention prevent multiple individuals from simultaneously requesting payment from different money transfer agents and receiving multiple payouts, since, presumably only one individual's biometric will result in transaction approval. Further still, collection of a biometric at the time of payment allows aggregation of transaction amounts for anti-money laundering compliance tracking.

Having described embodiments of the invention generally, attention is directed to FIG. 1A, which depicts a typical purchase transaction **100** in which a consumer uses a one-time-use credit card to complete a transaction with an online merchant. It will be appreciated, however, that, although embodiments of the present invention will be described herein with reference to online transactions using one-time-use credit cards, the present invention is not limited to such embodiments. This purchase transaction **100** begins at block **102** at which point a consumer requests and receives a one-time-use credit card number from an issuer. In doing so, the consumer provides, for example, an account number and password to the issuer. At block **104**, the consumer uses the one-time-use credit card number to complete a purchase transaction with an online merchant. At block **106**, the merchant obtains authorization for the transaction from the issuer, and the transaction is completed at block **108**. Thereafter, the merchant obtains compensation for the transaction from the issuer at block **110**, and the issuer obtains compensation from the consumer at block **112**.

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In the typical purchase transaction **100** of FIG. 1A, everything goes according to plan. FIG. 1B, however, depicts a purchase transaction **130** in which a fraudster acquires account details from the consumer leaving the issuer unable to collect the transaction funds from the consumer. The transaction **130** begins at block **132**, at which point the fraudster obtains the consumer's account password. The fraudster then uses the password to obtain a one-time-use credit card number from the issuer (**134**) and complete a transaction with a merchant (**136**). Because the number appears to have been obtained by the consumer, the transaction is authorized (**138**) and completed (**140**). The merchant is able to obtain compensation from the issuer (**142**), but when the issuer attempts to obtain compensation from the consumer (**144**), the consumer is able to successfully repudiate the transaction (**146**). Hence, the issuer is penalized because of the consumer's failure to protect his password. Of course, the consumer may fraudulently repudiate the transaction, and the issuer has no ability to challenge him. Embodiments of the present invention provide a solution to this situation.

Attention is directed to FIG. 2, which illustrates an exemplary system **200** according to embodiments of the invention. Those skilled in the art will appreciate that the system **200** is merely exemplary of a number of possible system embodiments. The system includes a computer **202** associated with a consumer. The computer **202** may be any of a variety of well-known computing devices such as, for example, a personal computer, a laptop computer, a personal digital assistant (PDA), a "Smart Phone," or the like. The consumer uses the computer **202** to communicate via a network **204** with a computer **206** associated with an issuer and/or an online merchant **208**. The network **204** may be, for example, the Internet, but other embodiments are possible. The computer **206** associated with the issuer may be a host computer system that includes a mainframe computer, a collection of servers, and/or the like. The computer **206** has at least one associated data storage arrangement **210**, which may be any of a variety of well known data storage arrangements. The computer **206** is programmed to perform the exemplary method embodiments disclosed herein.

The online merchant **208** may communicate with the issuer computer **204** via the network **204** or through a different network **212**, which may be, for example, a credit card transaction processing network. The online merchant **208** communicates with the issuer to obtain authorization for credit card transactions.

According to some embodiments, the consumer obtains a one-time-use credit card by communicating with the issuer via the Internet. This assumes that the consumer is able to provide a biometric sample via the Internet. In other embodiments, the consumer may use a telephone **214** to contact the issuer via the PSTN (public switched telephone network) **216** or Internet using, for example VOIP (Voice Over Internet Protocol), to thereby provide a voiceprint. Those skilled in the art will appreciate, in light of the disclosure herein, a number of additional embodiments through which a consumer may provide a biometric sample to the issuer.

Having described an exemplary system **200**, attention is directed to FIG. 3A, which depicts an exemplary method **300** according to embodiments of the invention. The method **300** may be implemented in the system **200** of FIG. 2 or other appropriate system. The method **300** begins at block **302** at which point a consumer requests a one-time-use credit card number from an issuer. The issuer obtains a biometric sample from the consumer at block **304** and uses the biometric sample to assign a one-time-use credit card to the consumer from a large pool of suitable one-time-use credit card num-

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bers at block **306**. Thereafter, the consumer provides the one-time-use credit card number to a merchant at block **308** in the process of completing a purchase transaction. The merchant obtains authorization for the transaction from the issuer at block **310**, and the transaction is completed at block **312**. The merchant thereafter obtains compensation from the issuer for the transaction at block **314**, and the issuer obtains compensation from the consumer at block **316**.

The method **300** depicts the typical case in which the consumer does not attempt to repudiate the transaction. FIG. 3B depicts what happens if the consumer attempts to repudiate the transaction.

Attention is directed to FIG. 3B, which depicts an exemplary repudiation process **320**. At block **322**, the consumer disputes the transaction. At block **324**, the issuer obtains a biometric sample from the consumer. The issuer also retrieves the biometric sample used to assign the one-time-use credit card to the consumer at block **326**. The issuer is then able to compare the two samples, and the consumer's ability to repudiate the transaction depends on the comparison. This is indicated by block **328**.

Hence, according to embodiments of the invention, a consumer is less able to repudiate a transaction, due to the tight coupling between the consumer, using the biometric, and the issuance of the one-time-use number. Of course, the consumer could also claim that the one-time-use number was pilfered after issuance, but other controls may be used to limit such possibility. For example, a consumer may protect himself by requesting the number close in time to the planned usage. The issuer may protect itself by limiting the validity duration of the number to only a few minutes, a few hours, or a few days. The one-time-use nature of the number provides further protection for both the consumer and the issuer by preventing multiple uses of the number. Even further protection may be provided if the merchant takes a biometric sample from the consumer at the time of the purchase transaction. The merchant would then provide the sample to the issuer as part of the authorization process.

Those skilled in the art will appreciate a number of modifications and additional advantages to embodiments of the present invention in light of the disclosure herein. Moreover, in light of the disclosure herein, those skilled in the art will appreciate how the concepts disclosed herein may be applied to other types of transactions. For example, FIGS. 4A and 4B depict an exemplary system **400** and exemplary method **430** for performing money transfer transactions according to embodiments of the present invention.

Attention is directed to FIG. 4A, which depicts an exemplary money transfer system **400** according to embodiments of the invention. The system **400** includes a sender agent location **402**, at which a sender may deposit funds for receipt by a recipient. The sender location **402** may be a computer of the sender or may be a physical agent location (e.g., money transfer office, store, etc.) equipped to initiate money transfer transactions. The sender agent location communicates, via a network **404**, with a money transfer system operator **406** to thereby receive a transaction identifier. Typically, a sender might receive a MTCN (Money Transfer Control Number) at this point, but that is not the case here. The sender receives a transaction identifier that cannot be used to obtain the funds like an MTCN could. The transaction identifier is stored at a storage arrangement **407** associated with the money transfer system operator.

The system **400** also includes a telephone **408** associated with a recipient and the PSTN (public switched telephone network) **410** through which the recipient may communicate with the money transfer system operator **406**. The recipient,

having received the transaction identifier from the sender, is able to provide the transaction identifier and a biometric sample to thereby obtain the MTCN. Those skilled in the art will appreciate many additional means through which the recipient may provide a biometric sample to and obtain a MTCN from the money transfer system operator.

The system also includes a recipient agent location **412** at which the sender may request payment. The sender agent location **412** is able to obtain a biometric sample from the recipient, communicate the biometric sample, along with the MTCN, to the money transfer system operator **406**, and receive authorization to pay the recipient. The recipient is paid only if the biometric the recipient provides matches the biometric supplied to obtain the MTCN.

Having described the money transfer system **400**, attention is directed to FIG. 4B, which depicts a money transfer method **430** according to embodiments of the invention. The method **430** may be implemented in the system **400** of FIG. 4A or other appropriate system. The method **430** begins at block **432**, at which location a sender deposits funds with a money transfer agent and obtains a transaction number. The transaction number is provided by the money transfer system operator. The sender provides the transaction number to the designated recipient at block **434**. The recipient contacts the money transfer system operator at block **436** and supplies the transaction identifier and a biometric sample to thereby receive the MTCN. The MTCN is generated by the money transfer system operator according to the embodiments of the invention.

At block **438**, the recipient requests payment from a money transfer agent. The agent collects the MTCN and a biometric sample from the recipient at block **440** and supplies them to the operator at block **442** as part of an authorization request. The operator uses the MTCN to locate the biometric sample provided to obtain the MTCN and authorizes the agent to pay the recipient only if the samples match, which takes place at block **444**.

Those skilled in the art will appreciate that the aforementioned embodiments are merely exemplary. Moreover, it will be appreciated that the any of a variety of methods may be employed to generate one-time-use credit card numbers, MTCNs, and the like from a biometric sample. In many embodiments, the one-time-use credit card number or MTCN is selected from a large pool of appropriately selected numbers using the biometric sample or a function of a biometric sample, but this is not required. The ensuing description, however, provides exemplary methods for generating a master pool, selecting numbers from the pool, and authorizing transactions using numbers selected from the pool.

Attention is directed to FIG. 5A, which illustrates an exemplary master pool **500** from which transaction settlement numbers may be selected. The transaction settlement numbers may be one-time-use credit card numbers, as in this example, or may be MTCNs, or the like in other embodiments. The master pool **500** includes a "record number" field, a "one-time CC#" field, and an "assignment table pointer" field. The record number field, in this exemplary embodiment, is numbered consecutively throughout the records in the pool, and the pool includes a sufficient number of records to satisfy expected demand for the transaction settlement numbers. The one-time CC# field includes a unique transaction settlement number in each record, and the field of each record is populated randomly as will be described with reference to FIG. 5B. The assignment table pointer field of each record maintains a pointer to a record in an assignment table. The assignment table will be described below with reference to FIG. 8. When a transaction settlement number is assigned,

the assignment table pointer field is populated as will be described below with reference to FIG. 9.

FIG. 5B depicts an exemplary method **530** for populating a master pool. At block **532**, an array of conforming numbers is generated. The numbers conform to appropriate specification for which the transaction settlement numbers will be used. For example, in this embodiment, the transaction settlement numbers are one-time-use credit card numbers, and the numbers which are sixteen digits long and include no letters. The numbers are in appropriate ranges (e.g., BIN ranges) to thereby prevent duplication with typical credit cards. In other examples, the transaction settlement numbers may be MTCNs, which would be appropriately formatted according to the desired specifications for MTCNs. Many such examples are possible.

At block **534**, a first transaction settlement number is randomly selected from the from the array. At block **536** a determination is made whether the transaction settlement number has already been selected. If it has, another transaction settlement number is randomly selected at block **534**. If the selected number has not been selected yet, the number is inserted into the master pool at block **538**. The process continues, consecutively populating records of the master pool with transaction settlement numbers, until the master pool is fully populated with random selections of transaction settlement numbers from the array. Those skilled in the art will appreciate that this is but one exemplary method for populating an exemplary master pool.

FIG. 6A depicts another method **600** for generating an array of one-time-use credit card numbers. In this embodiment, an array of one-time-use credit card numbers is generated. This array is used to assign one-time-use credit card numbers to a user and/or a master pool. At block **610** a one-time-use credit card number is created, which, according to specific embodiments, conforms to appropriate formats and/or standards for which the number will be used (e.g., credit card number, MTCN, etc.). The one-time-use credit card number is adjusted to comply with format and content specifications developed by the industry at block **615**. The one-time-use credit card number is then stored in a one-time-use credit card number array at block **620** whereupon the system returns to block **610**. Other means for storing the one-time-use credit card number may be used, such as a linked list, a generic file, a text file, etc.

FIG. 6B depicts a method **650** of generating a master pool of one-time-use credit card numbers according to one embodiment of the invention. At block **625** the record number is initiated and set to 1. A one-time-use credit card number is selected from a one-time-use credit card number array at block **630**. The array may be the array generated at block **620** of FIG. 6A. This number may be selected randomly, incrementally or systematically. Furthermore, the system may also select the one-time-use credit card number from any other storage location. Once the number is selected, the system, at block **635**, determines if it is currently in use or not. If it is currently in use, then the system returns to block **630** and another one-time-use credit card number is selected. The one-time-use credit card number may also be deleted from the one-time-use credit card number array. If the one-time-use credit card number is not in use, the one-time-use credit card number is inserted into the master pool **650** at block **640** at the location associated with the record number. The record number is incremented at block **645** and the system selects another number from the one-time-use credit card number array at block **630** whereupon the system is repeated.

FIG. 7 depicts a method **700** of generating an individual master pool of one-time-use credit card numbers for each

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credit card according to one embodiment of the present invention. While this embodiment generates and stores one-time-use credit card numbers in a pool, the method may be used for any type of transaction settlement number. According to this embodiment, each credit card number has an associated pool of one-time-use credit card numbers **730**. Each one-time-use credit card number pool **730** may be a fixed size or the size may be adjusted dynamically according to the number of one-time-use credit card numbers used or required by the user.

A credit card number is selected at block **710** for populating the one-time-use credit card number pool **730** associated with the credit card number. A one-time-use credit card number is randomly generated at block **715**. Generation of the one-time-use credit card number may also include steps to ensure the one-time-use credit card number complies with industry specifications. At block **720**, the method determines if the one-time-use credit card number generated at block **715** is unique, if it is not unique, the method returns to block **715**. The system may determine if the one-time-use credit card number is unique by refereeing to a list or array of issued credit card numbers, unissued credit card numbers or the like. If the one-time-use credit card number is unique, the method moves to block **725**. At block **725**, the one-time-use credit card number pool record number is incremented. At block **735**, the system determines if the one-time-use credit card number pool is full. If the pool is full, the system returns to block **710**, where another credit card number is selected. In alternative embodiments, the size of the one-time-use credit card number pool **730** may be increased and the system moves along to block **740**. In other embodiments, more than one one-time-use credit card number pool may be associated with the credit card number. At block **740**, the randomly produced one-time-use credit card number is entered into the one-time-use credit card number pool and the system returns to block **715**.

Attention is directed to FIG. **8**, which depicts an assignment table **800** according to embodiments of the present invention. The assignment table **800** maps starting numbers to transaction settlement numbers in the master pool **500**. The starting numbers maybe, for example, a consumer's credit card account number, as in this example, a transaction identifier provided to a sender in a money transfer transaction, or the like. The assignment table **800** includes a "key" field, a "record number" field, a "real CC#" field, a "usage conditions" field, a "previous pointer" field, and a "next pointer" field.

The key field provides an index to the assignment table. According to embodiments of the invention, the key field is based on a biometric sample as will be described in greater detail with respect to FIG. **9**. The record number field identifies a record in the master pool. The "real CC#" field stores the starting number from which the transaction settlement number is generated. In other exemplary embodiments, the real CC# field may be, for example, the transaction identifier provided to the sender in a money transfer transaction. The usage conditions field may include any of a variety of usage conditions associated with the transaction settlement number. For example, the usage conditions field may identify a limited number of merchants at which the transaction settlement number may be used. It may include an expiration time and/or date for the number, and/or the like. Those skilled in the art will appreciate a number of additional conditions that may be included in the usage number field. The previous and next pointers identify previous and next assignment table records

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in a daisy chain of records assigned to a common consumer, customer, recipient, or the like, as will be described in greater detail with respect to FIG. **9**.

The assignment table **800**, unlike the master pool **500**, is not fully populated initially. Additional records are added as transaction settlement numbers are requested and assigned by the issuer. A "last record assigned" pointer is used in the process of assigning transaction settlement numbers as will be described with respect to FIG. **9**.

Attention is directed to FIG. **9**, which depicts a method **900** of assigning transaction settlement numbers from the master pool according to embodiments of the present invention. At block **902**, a request for a transaction settlement number is received from a customer. In this embodiment, the request is for a one-time-use credit card number and the request is received by an issuer. In other embodiments, the request may be for a MTCN and be received by a money transfer system operator. The request includes a biometric sample (e.g., a voiceprint) from the customer. The request also identifies the customer's credit card account. For example, the customer may have used a USER ID and password to access an account electronically, and the account includes a feature that allows the customer to request a one-time-use credit card number.

At block **904**, the issuer creates a hash of the biometric sample, thereby producing #V. In this embodiment, the hashing algorithm produces a #V that is repeatable for different biometric samples of the same individual. In other embodiments, a function other than hashing may be used to produce #V. In other embodiments, the function may not produce a #V that is repeatable for different biometric samples of the same individual.

At block **906**, #V is used to search the assignment table. At block **908**, a determination is made whether #V has been used previously as an assignment table key. If not, the process continues at block **910**. If so, the process continues at block **918** as will be described below.

At block **910**, #V is populated into the key field of a new assignment table record. At block **912**, the "last record assigned" pointer is incremented to point to the next, unassigned, record in the master pool. At block **914**, the record # of the indicated record of the master pool is populated into the record # field of the new record of the assignment table. The customer's real credit card account number is populated into the real CC# field of the new assignment record, the key of the new assignment record is populated into the assignment pointer field of the current master pool record, and any usage conditions are populated into the usage conditions field of the assignment record. The next and previous pointers of the new assignment record are populated appropriately as will be described in greater detail hereinafter.

At block **916**, the transaction settlement number is returned to the customer. The customer may thereafter use the transaction settlement number in an appropriate transaction.

Returning to block **910**, if #V has been used previously (i.e., a record in the assignment table has the value #V as a key), blocks **912** and **914** are traversed repeatedly until the last assignment table record in the chain is located. Locating the last record in the chain, however, requires knowing how subsequent keys are assigned.

Each time a customer requests a transaction settlement number (e.g., a one-time-use credit card number), a new key is created. The first key is #V. The second key is #V XOR the first transaction settlement number assigned to the customer. Third key is the second key XOR the second transaction settlement number assigned to the customer, and so on.

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Hence, each new key incorporates together the customer's biometric and each previously assigned transaction settlement number.

Returning to the discussion of FIG. 9, if a record in the assignment table is located using #V, then the master pool record stored in the assignment table is used to locate the previously assigned transaction settlement number. The next key is then created by performing an XOR function of #V and the previously assigned transaction settlement number. This key is used to search the assignment table, and if a record is located, the next key in the sequence is created and the table is searched again. This process continues until a search of the assignment table does not return a record. The current key then becomes the key of the new record in the assignment table created at block 922.

It should now be apparent to those skilled in the art that the next and previous pointer fields may be, at block 914, populated to assist with searches of the assignment table. This will be particularly useful during authorization and dispute resolution processes as will be described in greater detail herein after with reference to FIGS. 10 and 11.

FIG. 10 shows a method 1000 for confirming the identity of a user by comparing a received biometric sample and the stored sample to detect for fraudulent transactions according to one embodiment of the invention. The method 1000 shown may be used for any type of transaction settlement identifier, such as, for example, one-time-use credit card numbers and/or MTCN's. In light of the embodiment described in the figure, those skilled in the art will recognize other embodiments well within the scope of the invention.

At Block 1010 a user contacts issuer to dispute a transaction they consider to be fraudulent. The user's identity may need confirmation because the user may deny requesting and having been issued a one-time-use credit card number and, therefore, deny making a transaction with the one-time-use credit card number. The user may also wish to confirm their identity in order to receive a payout.

At block 1015, the issuer receives the transaction settlement number from the user as well as a biometric sample at block 1020. After receiving the biometric feature, the issuer creates a hash (#H) of the biometric sample at block 1025 using a hashing algorithm as discussed above. The issuer may then retrieve the record associated with the transaction settlement number at block 1030, for example, from the assignment table.

The record retrieved at block 1030, may contain the transaction settlement number, and a unique key. The record may also contain previous and next pointers. The previous and next pointers link the records for a particular user in a chain like fashion. As described above, the key associated with each transaction settlement number may be a mathematical combination of the previous key and the previous transaction settlement number. The first key associated with a user is the hash of the biometric sample. Thus, at block 1035, the method determines whether this record associated with the transaction settlement number is the first record in the chain. If the previous pointer is NULL, then the record is the first record in the chain. If it is not the first record the method retrieves the previous record at block 1040. If the previous pointer equals NULL then the record is the first record. Between blocks 1035 and 1040, the method traverses the chain of records to find the first record. Once the first record is found the stored hash of the biometric sample (#V) is the key associated with the first record. At block 1045, the method determines whether the received biometric sample hash (#H) equals the stored hash of the stored biometric sample (#V). If the two hashed samples match, the identity of the user is confirmed at

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block 1050. If the two hashed samples do not match, the identity of the user is not confirmed.

The method 1000, for example, may be applicable in a system generating one-time-use credit card numbers, where a one-time-use credit card number is the transaction settlement number. In such systems, a user receives a one-time-use credit card number upon receipt of a biometric sample. If a user claims that they did not request a one-time-use credit card number, the biometric sample received from the user and stored when the one-time-use credit card number was issued may be used to either confirm or deny the users claim. For example, the user contacts the issuer at block 1010, the credit card number is received 1015, and a biometric sample is received 1020. The stored biometric sample used when the one-time-use credit card number was issued is retrieved in blocks 1030, 1035 and 1040 and the chain of records may be traversed. The biometric samples are compared. If the hash of the biometric sample received when the one-time-use credit card number was issued matches the hash of the biometric sample received at block 1020, then the user's claim is denied, because the one-time-use credit card number was issued to the user and not a fraudster. Otherwise, if there is no match, the user may have a genuine fraud claim, whereupon the issuers may initiate procedures to address the fraudulent activity.

FIG. 11 shows a method 1100 for confirming the identity of a user in a money transfer transaction according to one embodiment of the invention. In such transactions, in order to avoid fraudsters, a payout may only be received by first confirming the identity of the payee. Blocks 1110, 1115, 1120, 1125, 1130, 1135, 1140 and 1145 are similar to blocks 1010, 1015, 1020, 1025, 1030, 1035, 1040 and 1045 of FIG. 10, except in this method 1100 the transaction settlement identifier is a MTCN. At block 1145, if the hash of the received biometric sample does not match the hash of the stored biometric sample, then the payout is denied. If the two hashes match, then the method determines whether the aggregate payout to the user is greater than some predetermined threshold at block 1160. Legally, money transfers greater than a certain amount, must meet certain compliance requirements to deter money laundering. The aggregate payout may be determined by moving through the daisy chain of records and summing the payout of all transaction. If the aggregate payout is greater than the threshold then compliance requirements must be satisfied at block 1165 before payout occurs at block 1151. Those skilled in the art will recognize how to implement various compliance procedures. If the aggregate payout is not greater than the threshold then payout at block 1151 may occur.

Attention is directed to FIGS. 12 and 13, which depict exemplary embodiments of recipient-staged money transfer transaction. In these embodiments, a recipient "stages" a transaction by providing a biometric sample and receiving a transaction control number. The recipient also may provide other transaction details, but this is not necessary. The recipient provides the transaction control number to a sender, who then deposits funds using the transaction control number. The funds can then be released only upon the recipient providing a confirming biometric sample. The embodiments 1200 and 1300 provide two different ways in which this can be accomplished.

According to the embodiment 1200 of FIG. 12, a recipient stages a transaction at block 1210. This includes providing a biometric sample. The recipient may stage the transaction using a phone and providing a voice sample, visiting a money transfer location and providing another type of biometric sample, or using any of a variety of other ways apparent to

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those skilled in the art in light of this disclosure. The sample or a derivative thereof is stored in a transaction record, and the recipient is provided with a transaction control number at block 1212, which the recipient provides to a sender at block 1214.

At block 1216, the sender deposits funds and provides any additional details necessary to create the transaction. The transaction record established by the recipient is accessed using the transaction control number provided to the sender by the recipient. At this point, the ability to receive the funds is closely tied to the recipient via the biometric sample. The blocks 1210, 1212, 1214, and 1216 are substantially similar to the corresponding blocks 1310, 1312, 1314, and 1316 of the embodiment 1300 of FIG. 13.

The recipient can now receive the funds in any of several ways. According to the embodiment 1200 of FIG. 12, the recipient requests funds at a money transfer location and provides a biometric sample at block 1218. A determination is made at block 1220 whether the sample matches the sample provide at the time the transaction was staged. If it does not, then payout is denied at block 1222. If the sample matches, the payout is made at block 1224.

According to the exemplary embodiment 1300 of FIG. 13, a recipient is able to receive the funds electronically or at a money transfer location this is not equipped to take a biometric sample. At block 1318, the recipient requests a MTCN by providing a biometric sample. The recipient can request the biometric sample by, for example, phoning the money transfer system operator. At block 1320, a decision is made whether the sample matches the sample obtained at the time the transaction was staged. If it does not, the MTCN is not provided to the recipient, as indicated by block 1322. If, however, the samples match, the a MTCN is provided to the recipient at block 1324.

Thereafter, the recipient may use the MTCN to access the funds in any of a variety of ways, including by visiting a money transfer location, accessing an account electronically, and the like, as is apparent to those skilled in the art in light of this disclosure.

Having described several embodiments, it will be recognized by those of skill in the art that various modifications, alternative constructions, and equivalents may be used without departing from the spirit and scope of the invention. Additionally, a number of well-known processes and elements have not been described in order to avoid unnecessarily obscuring the present invention. For example, those skilled in the art know how MTCNs are used in money transfer transactions and how one-time-use credit card purchase transactions are settled. Moreover, those skilled in the art will appreciate that the concepts discussed herein may be directed toward other types of transactions. Accordingly, the above description should not be taken as limiting the scope of the invention, which is defined in the following claims.

What is claimed is:

1. A one-time credit card number generation system, the system comprising:

- a processor;
- a physical arrangement that receives a first biometric sample from a customer; and
- a computer system that generates one-time credit card numbers;

a computer-readable storage hardware device, wherein the computer-readable storage hardware device stores instructions that when executed by the processor, cause the processor to perform the steps of:

- creating a master pool or one-time credit card numbers;
- obtaining a first biometric sample from the customer;

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assigning a one-time credit card number from the master pool of one-time credit card numbers;

receiving an identifier from the customer;

mapping the assigned one-time credit card number to the received identifier of the customer;

using the created one-time credit card numbers in a transaction;

determining that a transaction using the one-time credit card number has been completed;

determining that the completed transaction is being disputed by the customer;

based on the determining that the transaction using the one-time credit card number has been completed, and disputed by the customer,

obtaining a second biometric sample from the customer;

retrieving the obtained first biometric sample;

determining that the first biometric sample matches the second obtained biometric sample; and

based on the determination that the first obtained biometric sample does not match the second obtained biometric sample, repudiating the transaction, wherein repudiation occurs following the transaction using the one-time credit card number being complete.

2. The one-time credit card number generation system of claim 1, wherein the instructions that when executed, further cause the processor to perform the step of:

based on the determination that the first biometric sample does match the second biometric sample, affirming the transaction, wherein affirmation occurs following the transaction using the one-time credit card number being complete.

3. The one-time credit card number generation system of claim 1, wherein the first biometric sample one or more of: a voiceprint, a fingerprint, a DNA sample, and a retinal scan.

4. The one-time credit card number generation system of claim 1, wherein instructions for populating the master pool with one-time credit card numbers comprise the steps of:

selecting randomly, from a previously generated array of conforming one-time credit card numbers, a candidate one-time credit card number;

determining that the candidate one-time credit card number has previously been selected;

based on the determining that the candidate one-time credit card number has previously been selected, selecting randomly another one-time credit card number from the previously generated array of conforming one-time credit card numbers; and

based on the determining that the candidate one-time credit card number has not previously been selected, inserting the credit card number in the master pool.

5. The one-time credit card number generation system of claim 1, wherein the instructions further comprise instructions to perform the step of:

receiving, from a merchant, the second biometric sample received at the time a transaction is conducted by the customer with the merchant using the selected one-time credit card number.

6. A method for using one-time use credit card numbers, the method comprising:

creating, by the computer system, a master pool or one-time credit card numbers;

obtaining, by the computer system, a first biometric sample from the customer;

assigning, by the computer system, a one-time credit card number from the master pool of one-time credit card numbers;

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receiving, by the computer system, an identifier from the customer;  
 mapping, by the computer system, the assigned one-time credit card number to the received identifier of the customer;  
 using, by the computer system, the created one-time credit card numbers in a transaction;  
 determining, by the computer system, that a transaction using the one-time credit card number has been completed;  
 determining, by the computer system, that the completed transaction is being disputed by the customer;  
 based on the determining that the transaction using the one-time credit card number has been completed and disputed by the customer, obtaining a second biometric sample from the customer, retrieving the obtained first biometric sample;  
 determining that the first obtained biometric sample matches the second obtained biometric sample, and based on the determination that the first obtained biometric sample does not match the second obtained biometric sample, repudiating the transaction, wherein repudiation occurs following the transaction using the one-time credit card number being complete.

7. The method for using one-time use credit card numbers of claim 6, further comprising, based on the determination that the first biometric sample does match the second biometric sample, affirming the transaction, wherein affirmation occurs following the transaction using the one-time credit card number being complete.

8. The method for using one-time use credit card numbers of claim 6, wherein the first biometric sample one or more of: a voiceprint, a fingerprint, a DNA sample, and a retinal scan.

9. The method for using one-time use credit card numbers of claim 6, further comprising:

selecting randomly, from a previously generated array of conforming one-time credit card numbers, a candidate one-time credit card number;

determining that the candidate one-time credit card number has previously been selected;

based on the determining that the candidate one-time credit card number has previously been selected, selecting randomly another one-time credit card number from the previously generated array of conforming one-time credit card numbers; and

based on the determining that the candidate one-time credit card number has not previously been selected, inserting the credit card number in the master pool.

10. The method for using one-time use credit card numbers of claim 6, further comprising receiving, from a merchant, the second biometric sample received at the time a transaction is conducted by the customer with the merchant using the selected one-time credit card number.

11. A non-transitory computer-readable storage hardware device for using one-time use credit card numbers, having instructions stored thereon, which when executed by a computer, cause the computer to perform the steps of:

creating a master pool of one-time credit card numbers;

obtaining a first biometric sample from the customer;

assigning a one-time credit card number from the master pool of one-time credit card numbers;

receiving an identifier from the customer;

mapping the assigned one-time credit card number to the received identifier of the customer;

using the created one-time credit card numbers in a transaction;

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determining that a transaction using the one-time credit card number has been completed;

determining that the completed transaction is being disputed by the customer;

based on the determining that the transaction using the one-time credit card number has been completed and disputed by the customer,

obtaining a second biometric sample from the customer,

retrieving the obtained first biometric sample,

determining that the first obtained biometric sample matches the second obtained biometric sample, and

based on the determination that the first obtained biometric sample does not match the second obtained biometric sample, repudiating the transaction, wherein repudiation occurs following the transaction using the one-time credit card number being complete.

12. The non-transitory computer-readable storage hardware device for using one-time use credit card numbers of claim 11, wherein the instructions that when executed, further cause the computer to perform the step of:

based on the determination that the first biometric sample does match the second biometric sample, affirming the transaction, wherein affirmation occurs following the transaction using the one-time credit card number being complete.

13. The non-transitory computer-readable storage hardware device for using one-time use credit card numbers of claim 11, wherein the first biometric sample one or more of: a voiceprint, a fingerprint, a DNA sample, and a retinal scan.

14. The non-transitory computer-readable storage hardware device for using one-time use credit card numbers claim 11, wherein instructions for populating the master pool with one-time credit card numbers comprise instructions to perform the steps of:

selecting randomly, from a previously generated array of conforming one-time credit card numbers, a candidate one-time credit card number;

determining that the candidate one-time credit card number has previously been selected;

based on the determining that the candidate one-time credit card number has previously been selected, selecting randomly another one-time credit card number from the previously generated array of conforming one-time credit card numbers; and

based on the determining that the candidate one-time credit card number has not previously been selected, inserting the credit card number in the master pool.

15. The non-transitory computer-readable storage hardware device for using one-time use credit card numbers of claim 11, wherein the instructions further comprise instructions to perform the step of:

receiving, from a merchant, the second biometric sample received at the time a transaction is conducted by the customer with the merchant using the selected one-time credit card number.

16. The non-transitory computer-readable storage hardware device for using one-time use credit card numbers of claim 11, wherein the instructions that when executed, further cause the computer to perform the step to:

generating an array of conforming one-time credit card numbers.

17. The non-transitory computer-readable storage hardware device for using one-time use credit card numbers of claim 16, wherein the instructions that when executed, further cause the computer to perform the step of:

populating a master pool with one-time credit card numbers.

18. The non-transitory computer-readable storage hardware device for using one-time use credit card numbers of claim 17, wherein the instructions that when executed, further cause the computer to perform the step of:

selecting randomly, the one-time credit card number in the master pool, from the previously generated array of conforming one-time credit card numbers. 5

19. The non-transitory computer-readable storage hardware device for using one-time use credit card numbers of claim 18, wherein the instructions that when executed, further cause the computer to perform the step of: 10

creating a hash using the first biometric sample.

20. The non-transitory computer-readable storage hardware device of claim 11, wherein the instructions further comprise instructions to perform the step of: 15

receiving, from a merchant, the second biometric sample received at the time a transaction is conducted by the customer with the merchant using the selected one-time credit card number.

\* \* \* \* \*

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 9,123,044 B2  
APPLICATION NO. : 14/318683  
DATED : September 1, 2015  
INVENTOR(S) : Tim Keane et al.

Page 1 of 1

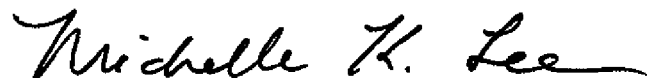
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the Claims:

Column 18, line 34, please delete “steps” and insert --step--.

Column 18, line 59, please delete “to:” and insert --of:--.

Signed and Sealed this  
Nineteenth Day of January, 2016

A handwritten signature in black ink, reading "Michelle K. Lee". The signature is written in a cursive, flowing style.

Michelle K. Lee  
*Director of the United States Patent and Trademark Office*